D-15/150

SERVICE MANUAL

US Model
Canadian Model
D-15
AEP Model
UK Model
E Model
Australian Model
D-150

SONY
Discman
OPEN
DIGITAL
HOLD
ENTER
REMAIN
MODE
PLAY
KEY
VOLUME

Discman

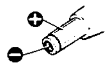
SPECIFICATIONS

CD section	
System	Compact disc digital audio system
Laser diode properties	Material: GaAlAs Wavelength: 780 nm Emission duration: Continuous Laser output: Max. 44.6 μW *This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.
Spindle spped	500 r.p.m. to 200 r.p.m. (CLV)
Scan velocity	1.2–1.4 m/sec.
Error correction	Sony Super Strategy Cross Interleave Reed Solomon Code
D-A conversion	16-bit linear
Frequency response	20–20,000 Hz ±1 dB*
Dynamic range	More than 90 dB*
Signal-to-noise ratio	More than 85 dB
Wow and flutter	Below measurable limit*
Outputs (at 9V input level)	Line output (stereo minijack) Output level 0.7 V rms at 50 kilohms Load impedance over 10 kilohms Headphones (stereo minijack) 9 mW+9 mW at 32 ohms

*Measured by EIAJ CP-307

General	
Power requirements	Supplied rechargeable battery pack BP-2 or BP-100 (optional) DC IN 9V jack accepts: Supplied AC power adaptor Sony CPM-100P car mount plate (optional) or Sony DCC-120 car battery cord (optional) for use on 12V car battery
Power consumption	1.8 W DC
Dimension	Approx. 125.8×20.8×134.6 mm ($5\times\frac{27}{32}\times5\frac{3}{8}$ in.) (w/h/d) not incl. inclined part (depth), projecting parts and controls Approx. 127.3×24.1×136.2 mm ($5\frac{1}{8}\times\frac{31}{32}\times5\frac{3}{8}$ in.) (w/h/d) incl. projecting parts and controls
Weight	Approx. 380 g (1 lb 2 oz), not incl. rechargeable battery Approx. 450 g (1 lb) incl. rechargeable battery
Supplied accessories	AC power adaptor (1) Rechargeable battery pack (1) Carrying case (1) Carrying belt (1) Connecting cord (1) (stereo miniplug ←→ two phono plugs)

Note: Use only the supplied AC power adaptor or the recommended car battery cord manufactured by Sony. Polarity of the plugs of other manufacturers may be different.



CAUTION

- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

COMPACT DISC COMPACT PLAYER

SONY®

MICROFILM

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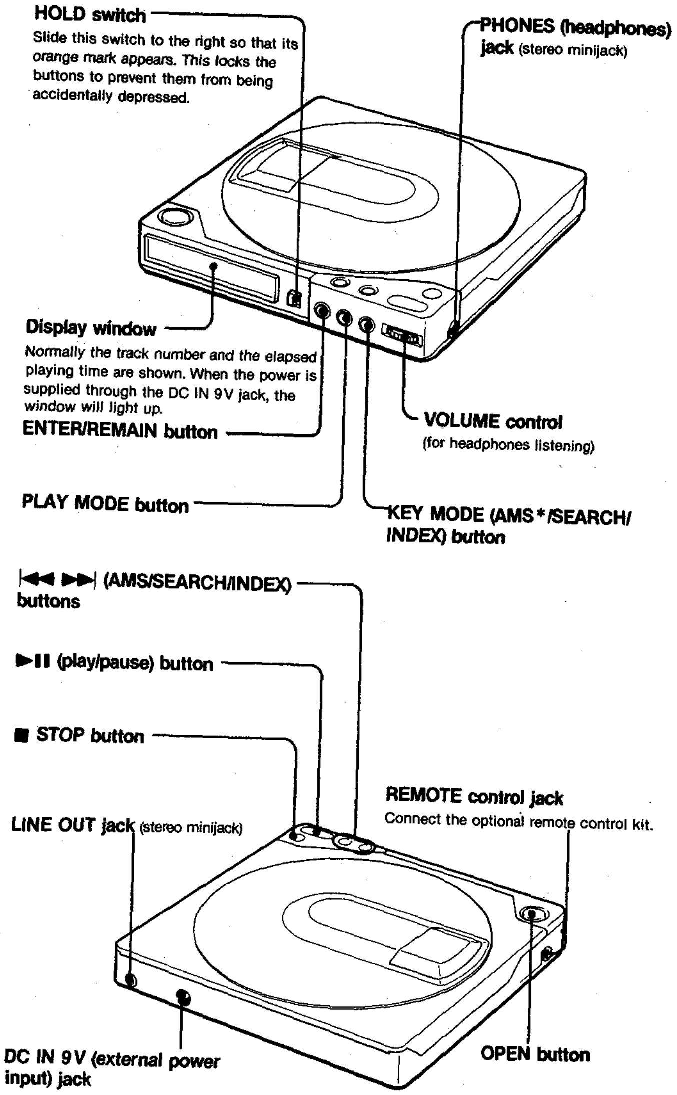
Location and Function of Controls


HOLD switch
Slide this switch to the right so that its orange mark appears. This locks the buttons to prevent them from being accidentally depressed.
PHONES (headphones) jack (stereo minijack)
Display window
Normally the track number and the elapsed playing time are shown. When the power is supplied through the DC IN 9V jack, the window will light up.
ENTER/REMAIN button
VOLUME control (for headphones listening)
PLAY MODE button
KEY MODE (AMS*/SEARCH/INDEX) button
⏮ ⏭ (AMS/SEARCH/INDEX) buttons
▶II (play/pause) button
■ STOP button
REMOTE control jack
Connect the optional remote control kit.
LINE OUT jack (stereo minijack)
DC IN 9V (external power input) jack
OPEN button

*AMS is the abbreviation of Automatic Music Sensor.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SERVICING NOTES

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK

The laser diode in the optical pick-up block may suffer electrostatic breakdown because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic breakdown and also use the procedure in the printed matter which is included in the repair parts.

Flexible Circuit Board Repairing

1. Keep the temperature of the soldering iron at 270° ± 10°C during repairing.
2. Do not touch the soldering iron more than 4 seconds or 3 times on the same conductor of the circuit board.
3. Do not apply force on the conductor when soldering or unsoldering.

Before Replacing the Optical Block

Please be sure to check thoroughly the parameters as par the "Optical Block Checking Procedures" (Part No.: 9-960-027-11) issued separately before replacing the optical block.
Note and specifications required to check are given below.

- FOK output: IC501 ⑨ pin
  When checking FOK, remove the lead wire to disc motor and ansolder and open IC801 ㉔ pin.
- S carve P-to-P value: 2.95 Vp-p
- Adjusted part for focus gain adjustment: RV505
- RF signal P-to-P value: 0.75 – 1.4 Vp-p
- Traverse signal P-to-P value: 1.8 Vp-p
- The grating holder can not repair.
- Adjusted part for tracking gain adjustment: RV501

Replacing chip components

All chip components should be connected and disconnected, using a tapered soldering iron [temperature of the iron tip: less than 280°C (536°F)], a pair of tweezers and braided wire.

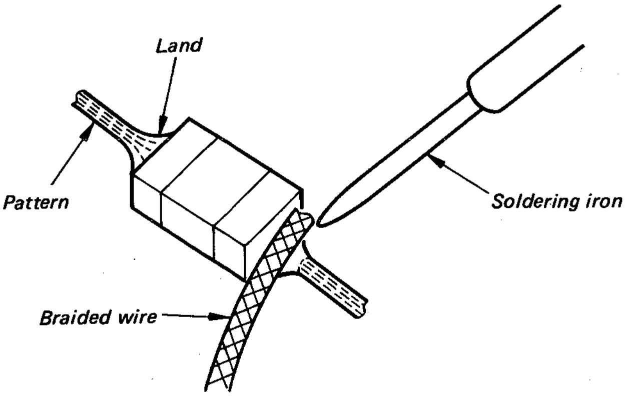
Precautions for replacement

1. **Do not disconnect the chip component forcefully. Otherwise, the pattern may peel off.**
2. **Never re-use a disconnected chip component. Dispose of all old chip components.**
3. **To protect the chip component, heating time for attaching the component should be within 3 seconds.**

○ Removing chip components

(1) Removing solder at electrode

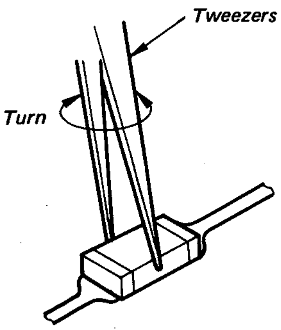
Remove the solder at the electrode, using a thin braided wire. Do not remove the solder of the part (chip component) attached adjacent to the electrode.



(2) Disconnecting chip components

Turn the tweezers with the soldering iron alternately applied to both electrodes, and the chip component will be disconnected. Take careful precautions while disconnecting, because if the chip component is forcefully removed the land may peel off.

Never re-use a disconnected chip component.



(3) Smoothing the soldered surface

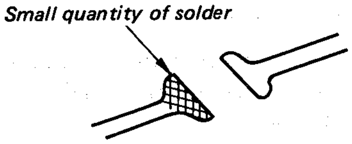
After disconnecting the chip component, remove the solder by using a braided wire to smooth the land surface.

○ Connecting chip components

The value of chip components is not displayed on the main body. Take due precautions to avoid mixing new chip components with other ones.

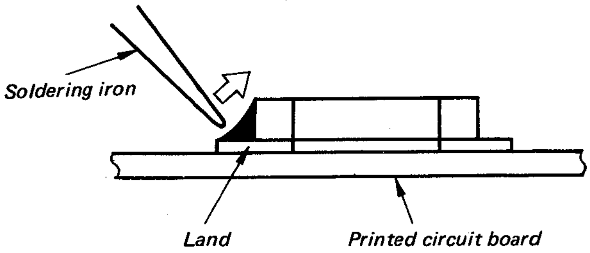
(1) Applying solder to land on one side

Apply a thin layer of solder to the land on one side where the chip component is to be connected. Too much solder may cause bridging.



(2) Speedy soldering

Hold the chip component at the desired position, using tweezers, and apply the soldering iron in the arrow-marked direction. To protect the chip component, heating time should be within 3 seconds.



(3) Speedy soldering of electrode on the other side

Solder the electrode on the other side in the same way as in (2) above.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe, from more than 30 cm away from the objective lens.

Laser Diode Check Procedure

The laser diode on this set will not emit unless the top panel is closed and S901 (leaf SW type) is turned on. The laser diode will always emit even if focus search is not performed in service mode.
The laser diode is checked using the current value which flows to the laser diode inside the UPF.

Procedure 1 (service mode or normal operation)
Check the laser diode emission with the eye.

1. Open upper panel.
2. S901 on as Fig. 1.
   (In service mode, this operation is not necessary.)
3. Press the ▶II key.
   (In service mode, this operation is not necessary.)
4. Observe the objective lens and confirm that the laser diode is emitting light. At this time, the laser diode goes on about 10 seconds due to focus serarch. If it does not, APC circuit or UPF is defective.

Procedrue 2 (service mode or normal operation)
Check by the curent with flows in the laser diode.

1. Close the top panel.
2. Remove the main board and read the current value on the label affixed to the UPF.
   (Label on UPF)

KSS-165A
JAPAN
S123
499 — current value
This means 49.9 mA.

   The current value varies with the set.
3. Connect a VOM as shown in Fig. 2.
4. Press the ▶▌▌ key.
5. Calculate the current by the VOM reading.
   VOM reading (V) ÷ 10 = current (A)
   ex. VOM reading = 0.49 V
   0.49 ÷ 10 = 0.049 (A) = 49 (mA)
6. Confirm that the ammeter reading is within the range given below.
   value on label $^{+5}_{-11}$ mA (25°C)
   variation relative to temperature:
   0.4 mA/°C
   (Current increases when temperature rises and decreases when it drops.)
   If the value is more than the range given, APC circuit has been defective or the laser diode has deteriorated. If it is less, APC circuit or UPF is defective.

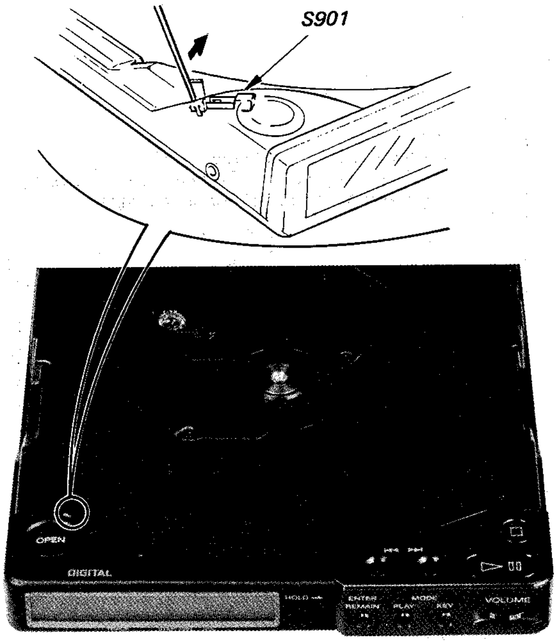


Fig. 1 Turning S901 on

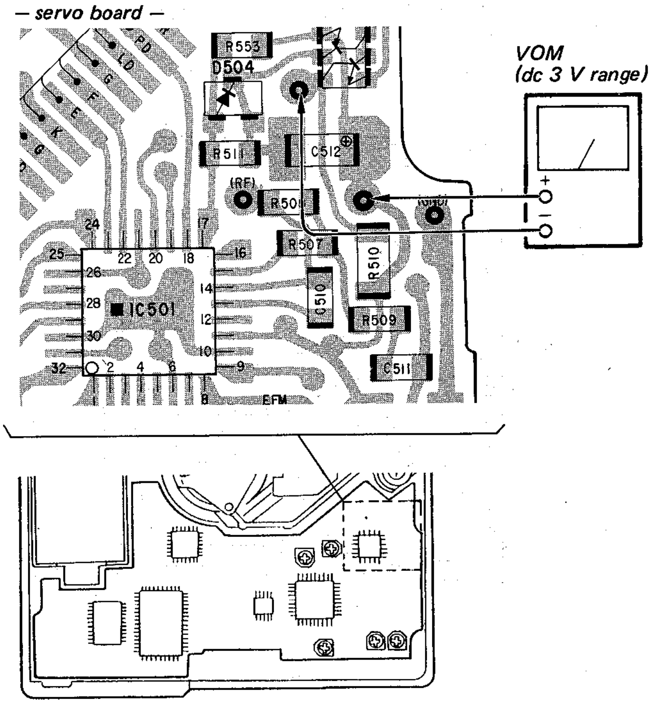
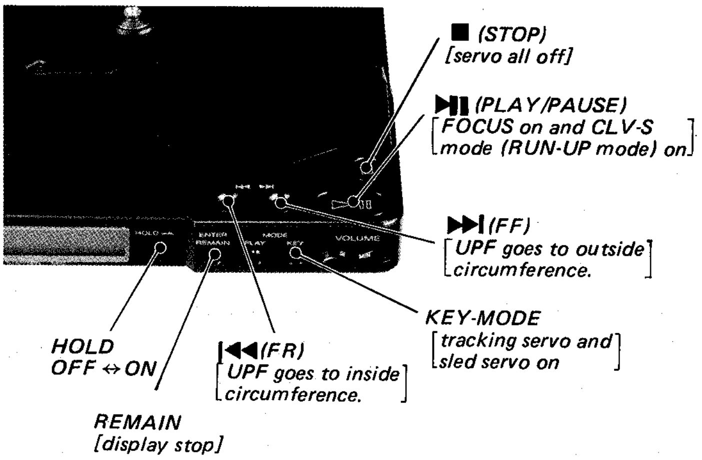


Fig. 2 VOM Connection

SERVICE MODE (service program)

This set has built-in service program in the microcomputer as usual sets.
The operation method of service program is explained below.


■ (STOP)
[servo all off]
▶❙❙ (PLAY/PAUSE)
[FOCUS on and CLV-S mode (RUN-UP mode) on]
▶▶❙ (FF)
[UPF goes to outside circumference.]
KEY-MODE
[tracking servo and sled servo on]
HOLD
OFF ↔ ON
❙◀◀ (FR)
[UPF goes to inside circumference.]
REMAIN
[display stop]
HOLD
ENTER
REMAIN
MODE
PLAY
KEY
VOLUME

Be sure to set HOLD switch OFF.
If not key inputs can not be operated.

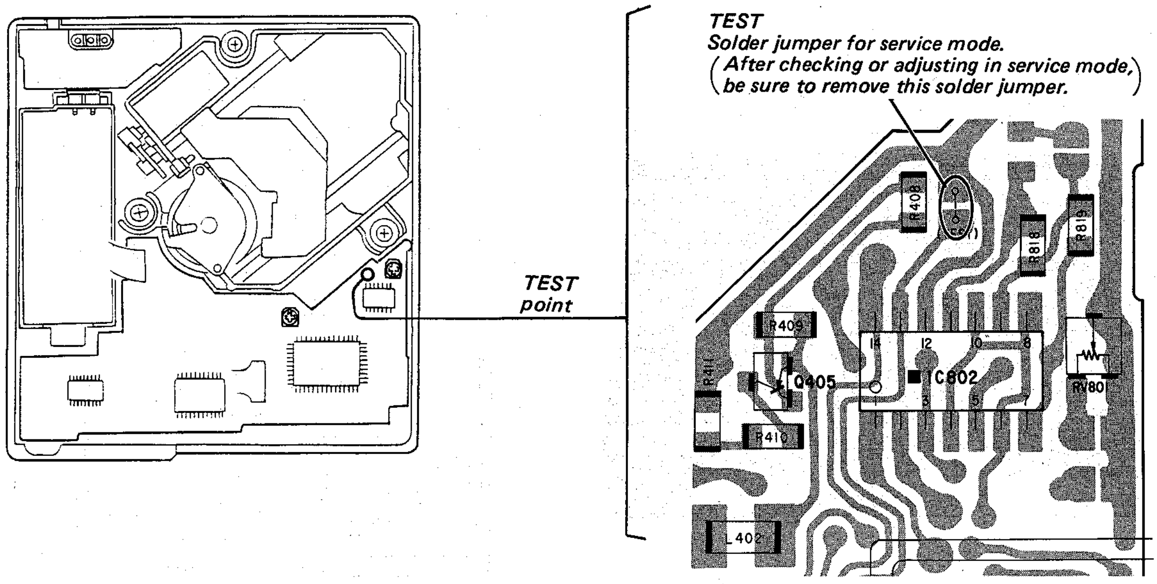
[ ] : Main operation in service mode for details, refer to step 2.

Fig. 3 Key Positions

Step 1 (Service Mode setting method)

1. Turn the HOLD switch OFF with the external power supply not plugged in (no power applied to set) and press the ▶❙❙ key.
2. Solder jumper TEST point.
   (IC801 pin ⑨ (BAT-E) pin is grounded.
3. Plug in external power supply.
   This puts the set into service mode.

– main board –


TEST
point
R408
R818
R819
R409
R411
Q405
IC802
RV801
R410
L402
14
12
10
8
3
5
7

TEST
Solder jumper for service mode.
(After checking or adjusting in service mode, be sure to remove this solder jumper.)

Fig. 4 TEST Point Position

Step 2 (Service Mode operation)

1. When service mode is set, the display will change 6 times, and those 6 changes will be repeated over and over.
   With this the LCD display should be present in service mode. Even if LCD does not display, other operations will be performed.
2. When ▶▶| or |◀◀ key is pressed, the UPF moves to the inside or outside circumference. Tracking servo and sled servo go off when this is done, so press KEY-MODE to turn on the tracking servo if necessary.
3. When REMAIN is pressed, the display stops. When REMAIN is released, the display continues to change. This allows check of each segment.
4. When ▶❚❚ key is pressed, CLV-S (pull-in mode) starts while performing focus search. When there is no disc installed, focus search is repeated several times while disc motor is rotating.
5. When KEY-MODE is pressed, tracking servo, sled servo and CLV-A (servo during PLAY) go ON.
6. When 4 and 5 are performed, the disc begins to play. At this time, the top panel should be closed and S901 are to be ON.
7. All servo (focus, tracking, sled and spindle) go off when ■ key is pressed. But disc motor continues rotating for a while by inartia.

Step 3 (Service Mode release)

1. First be sure to unplug the external power supply, then remove the TEST point solder jumper.
2. The set will now operated normally.

SECTION 1

ELECTRICAL ADJUSTMENTS

Notes on Adjustment

1. Perform adjustments except for RECHARGEABLE VOLTAGE ADJUSTMENT and BATTERY DISPLAY ADJUSTMENT in service mode. Be sure to release service mode after completing adjustment.
   (Refer to "Service Mode (service program)" on page 6, 7.)
2. Perform adjustments in the order given.
3. Use YEDS-18 disc (part No.: 3-702-101-01) unless otherwise indicated.
4. Power supply voltage: DC 9 V
   HOLD switch: OFF

PREPARATION

Put the set into service mode (see page 6, 7) and perform the following checks. Repair if there are any abnormalities.

- **Sled Motor Check**

1. Press the OPEN button and open the top panel.
2. Press the ▶▶| , |◀◀ keys and make sure that the UPF moves smoothly, without catching, from the inmost → outmost → inmost circumference.
   ▶▶| : UPF moves outward
   |◀◀ : UPF moves inward

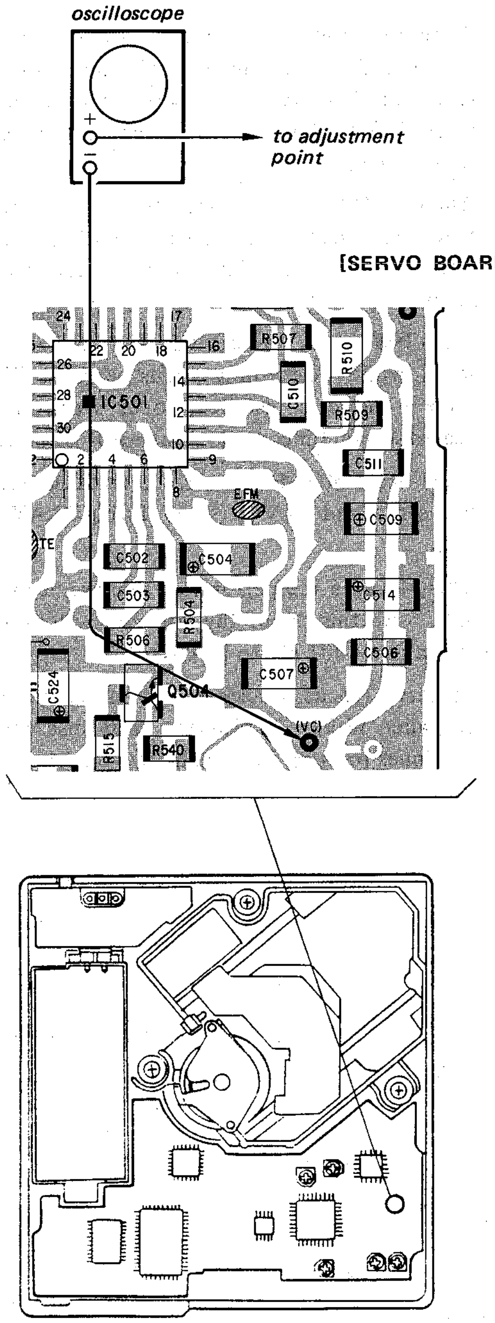
- **Focus Search Check**

1. Press the OPEN button and open the top panel.
2. Press the ▶II key. (Focus search is performed continuously.)
3. Observe the UPF objective lens and check that it moves smoothly up and down with no catching or noises.
4. Press the ■ key.
   Check that focus search operation stops. If it does not stop, press the ■ key again longer than before. But disc motor continues rotating for a while by inartia.

VC (1/2 Vcc) Connecting Point

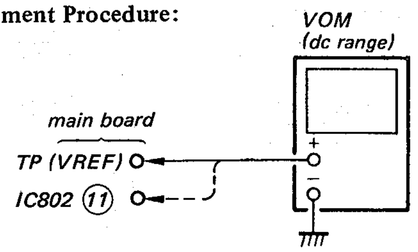
FOCUS BIAS ADJUSTMENT
TRACKING BALANCE ADJUSTMENT

When the adjustments above are performed, connect the ⊖ side of oscilloscope to the point below.



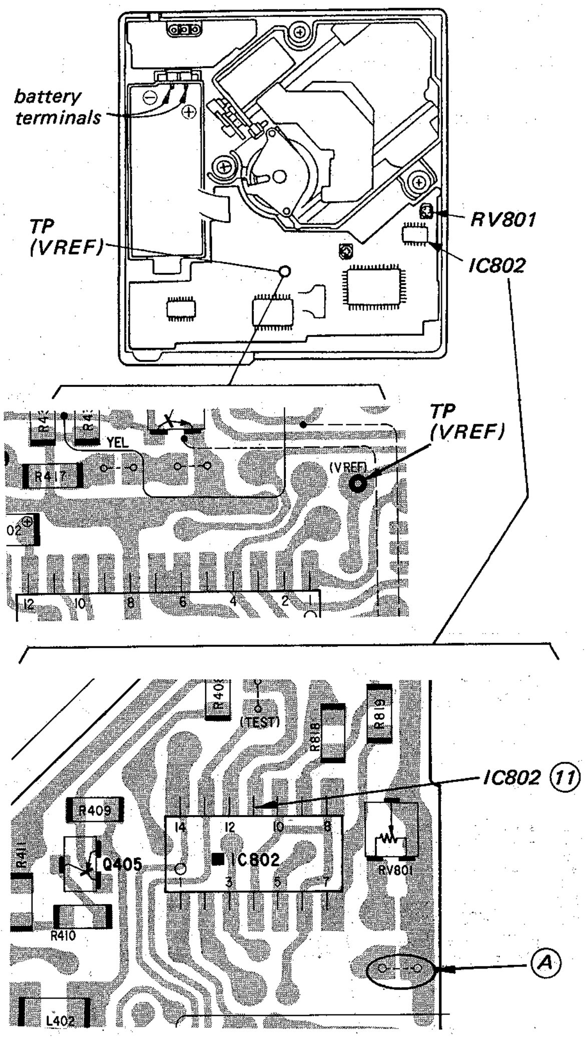
Battery Display Adjustment

Adjustment Procedure:


VOM
(dc range)
main board
TP (VREF)
IC802 ⑪
+
–

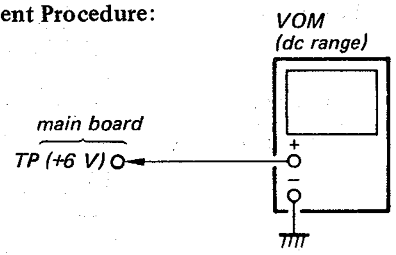
1. Apply dc +3.5 V to terminals for bult-in battery (BP-2).
2. Insert the disc (YEDS-18) and put the set into play mode.
3. Adjust RV801 so that main board IC802 ⑪ voltage and TP (VREF) voltage are equal.
4. If IC802 ⑪ voltage is heigher than TP (VREF) voltage when turning the RV801 fully counter-clockwise, short the jumper point Ⓐ as shown below and adjust RV801.

Adjustment Location: main board


battery terminals
TP (VREF)
RV801
IC802
TP (VREF)
YEL
R417
(VREF)
IC802 ⑪
(TEST)
R818
R819
R409
R411
Q405
IC802
RV801
R410
L402
Ⓐ

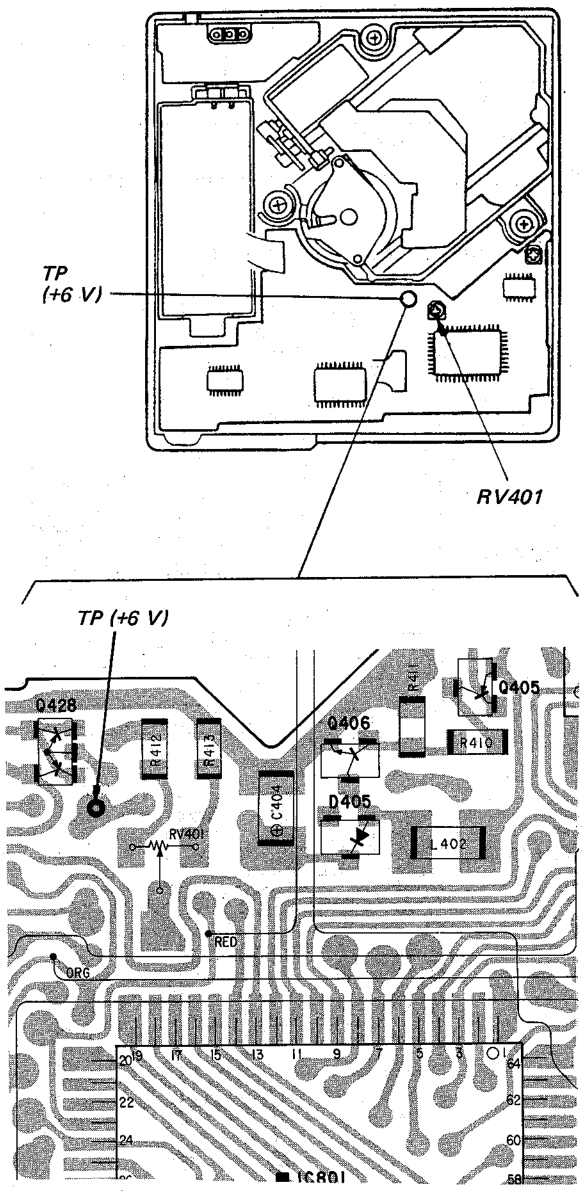
+6 V Adjustment

Adjustment Procedure:


VOM
(dc range)
main board
TP (+6 V)
+
–

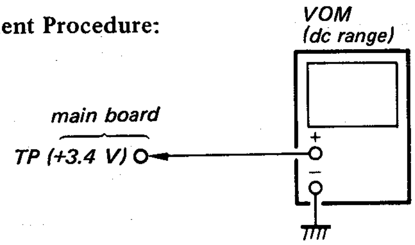
1. Put the set into service mode (see page 6, 7).
2. Connect the VOM to main board TP (+6 V).
3. Adjust RV401 for +6 ±0.1 V reading on the VOM.
4. After adjustment, release service mode (see page 6, 7).

Adjustment Location: main board


TP (+6 V)
RV401
TP (+6 V)
Q428
R412
R413
R411
Q405
R410
Q406
D405
C404
RV401
L402
RED
ORG
IC801

+3.4 V Adjustment

Adjustment Procedure:


VOM
(dc range)
main board
TP (+3.4 V)
+
–

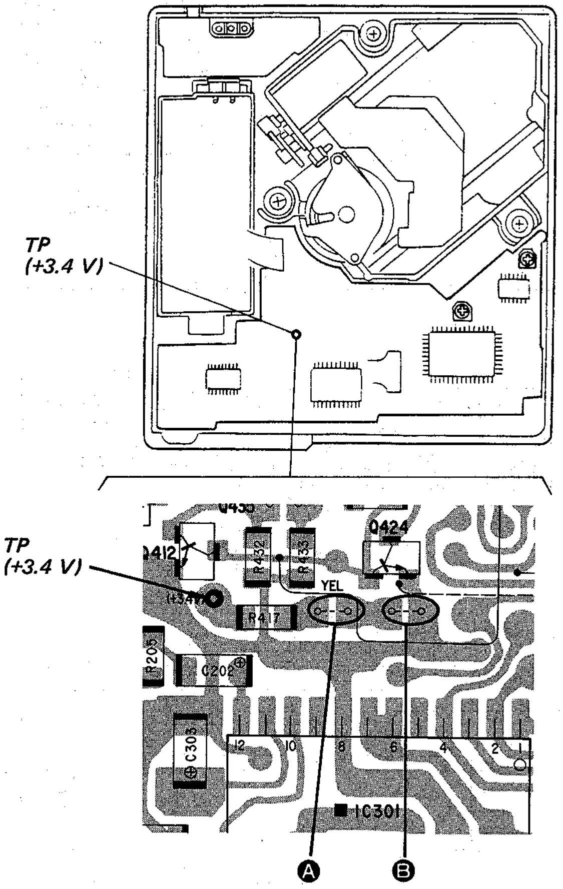
1. Put the set into service mode (see page 6, 7).
2. Connect the VOM to main board test point TP (+3.4 V).
3. Adjust the pattern connecting (Ⓐ or Ⓑ) to obtain 3.4 to 3.55 V reading on the VOM.

pattern connection		VOM reading
Ⓐ	Ⓑ	
○	X	down
X	X	↕
X	○	
○	○	up

○: short X: open

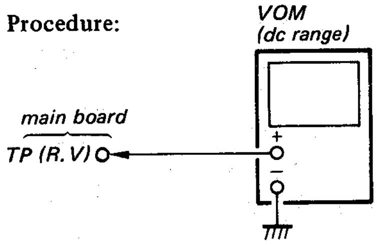
4. After adjustment, release service mode (see page 6, 7).

Adjustment Location: main board


TP
(+3.4 V)
TP
(+3.4 V)
Q412
R432
R433
Q424
YEL
R417
C202
C303
IC301
12
10
8
6
4
2
1
Ⓐ
Ⓑ

Rechargeable Voltage Adjustment

Adjustment Procedure:


VOM
(dc range)
main board
TP (R. V)
+
–

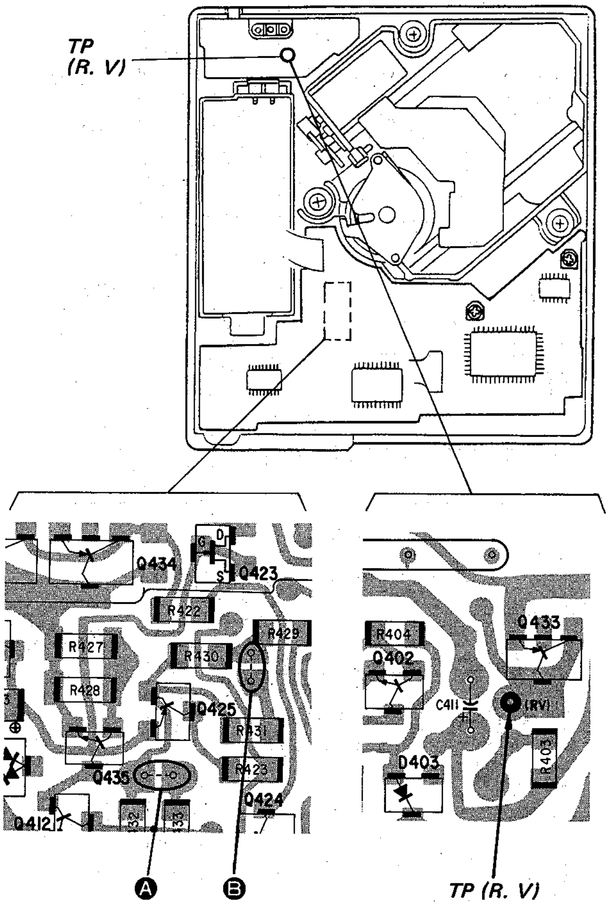
1. Connect the VOM to main board test point TP (R.V).
2. Apply DC 9 V with requrated dc power supply from external power jack CN401.
3. Adjust the pattern connection (Ⓐ or Ⓑ) to obtain 7.1 to 7.5 V reading on the VOM.

pattern connection		VOM reading
Ⓐ	Ⓑ	
X	○	down
○	○	↕
X	X	
○	X	up

○: short X: open

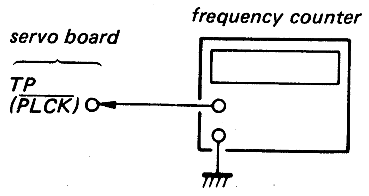
Note: Measure after the VOM reading becomes stable.

Adjustment Location: main board


TP
(R. V)
Q434
Q423
R422
R427
R430
R429
R428
Q425
R431
Q435
R423
Q424
Q412
R404
Q433
Q402
C411
(RV)
D403
R403
Ⓐ
Ⓑ
TP (R. V)

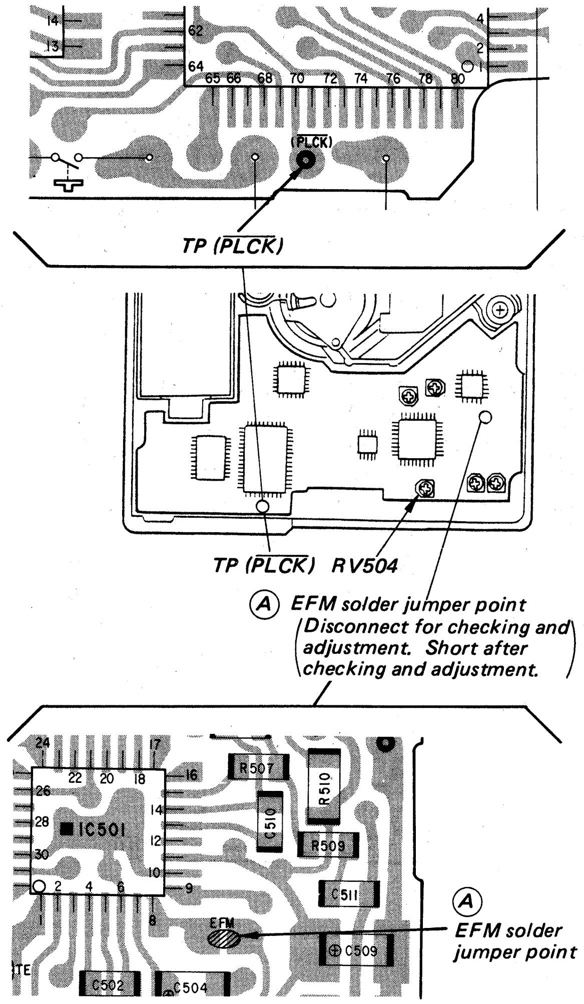
PLL Free Run Frequency Check and Adjustment

Check/Adjustment Procedure:


frequency counter
servo board
TP
(PLCK)

1. Disconnect the jumper point Ⓐ (EFM) in the diagram below.
2. Connect a frequency counter to servo board test point TP (PLCK).
3. Put the set into service mode (see page 6, 7).
4. Check that the frequency counter reading is 4.3 ±0.01 MHz. If not, adjust RV504 so that it is 4.3 ±0.01 MHz.
5. After adjustment, release service mode (see page 6, 7).
6. Short the jumper point shorted in step 1.

Check/Adjustment Location: servo board


TP (PLCK)
TP (PLCK) RV504
IC501
EFM
C509
C502
C504
R507
R510
R509
C510
C511
(PLCK)

Ⓐ EFM solder jumper point (Disconnect for checking and adjustment. Short after checking and adjustment.)

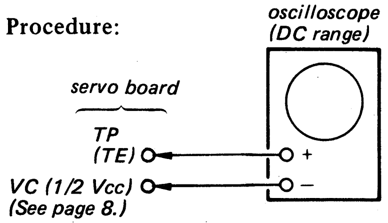
Ⓐ EFM solder jumper point

Tracking Balance Adjustment

Conditions:

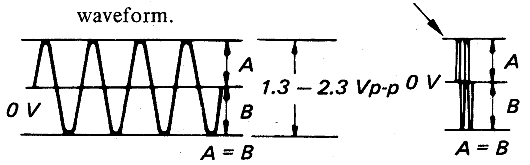
The set should be placed either horizontally.

Adjustment Procedure:


oscilloscope
(DC range)
servo board
TP
(TE)
VC (1/2 Vcc)
(See page 8.)
+
−

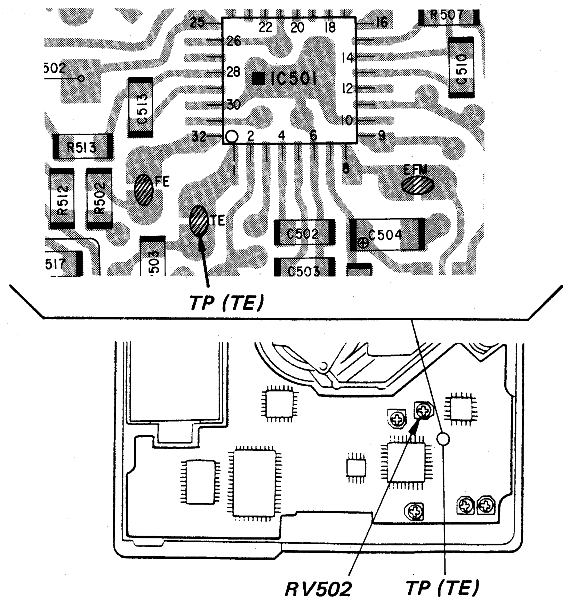
1. Connect the oscilloscope to servo board TP (TE).
2. Put the set into service mode (see page 6, 7).
3. Press the ▶▶| and |◀◀ keys to move the UPF to the center.
4. Insert the disc (YEDS-18) and close the top panel.
5. Press the ▶❚❚ key.
   (It will go from focus search to focus on, and CLV pull-in mode state. Tracking and sled are OFF.)
6. Adjust RV502 so that the oscilloscope waveform is symmetrical on the top and bottom in relation to 0 V.

   Note: Take sweep time as long as possible to obtain best waveform.


A
B
0 V
1.3 – 2.3 Vp-p
A = B
0 V
A
B
A = B

7. Unplug the external power supply to stop spindle motor from rotating.
8. After adjustment, release service mode (see page 6, 7).

Adjustment Location: servo board

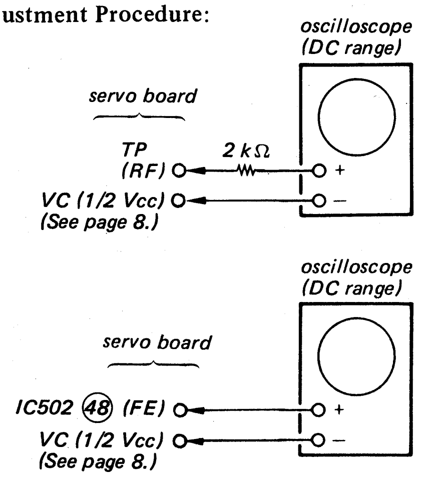

IC501
R507
C510
R513
R512
R502
C513
FE
TE
EFM
C502
C504
C503
TP (TE)
RV502 TP (TE)

Focus Bias Adjustment

Conditions:

The set should be placed either horizontally.

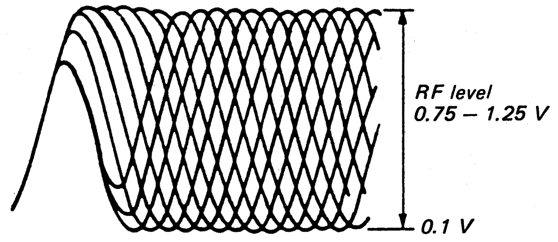
Adjustment Procedure:


oscilloscope
(DC range)
servo board
TP
(RF)
2 kΩ
VC (1/2 Vcc)
(See page 8.)
oscilloscope
(DC range)
servo board
IC502 ㊽ (FE)
VC (1/2 Vcc)
(See page 8.)
+
−

1. Put the set into service mode (see page 6, 7).
2. Connect the oscilloscope to servo board test point TP (RF).
3. Press the ▶▶| and |◀◀ keys to move the UPF to the center. (Move the UPF to the music area on the disc to enable easy visibility of the eye pattern).
4. Insert the disc (YEDS-18) and close the top panel.
5. Press the ▶❚❚ key.
   (It will go from focus search to focus on, and CLV pull-in mode state. Tracking and sled are OFF.
6. Press the KEY-MODE button. (Tracking and sled go ON.)
7. Adjust RV503 so that the oscilloscope waveform eye pattern is good. A good eye pattern means that the diamond shape (◇) in the center of the waveform can be clearly distinguished.

- **RF Signal Reference Waveform (eye pattern)**

VOLT/DIV: 200 mV
TIME/DIV: 500 nS


RF level
0.75 – 1.25 V
0.1 V

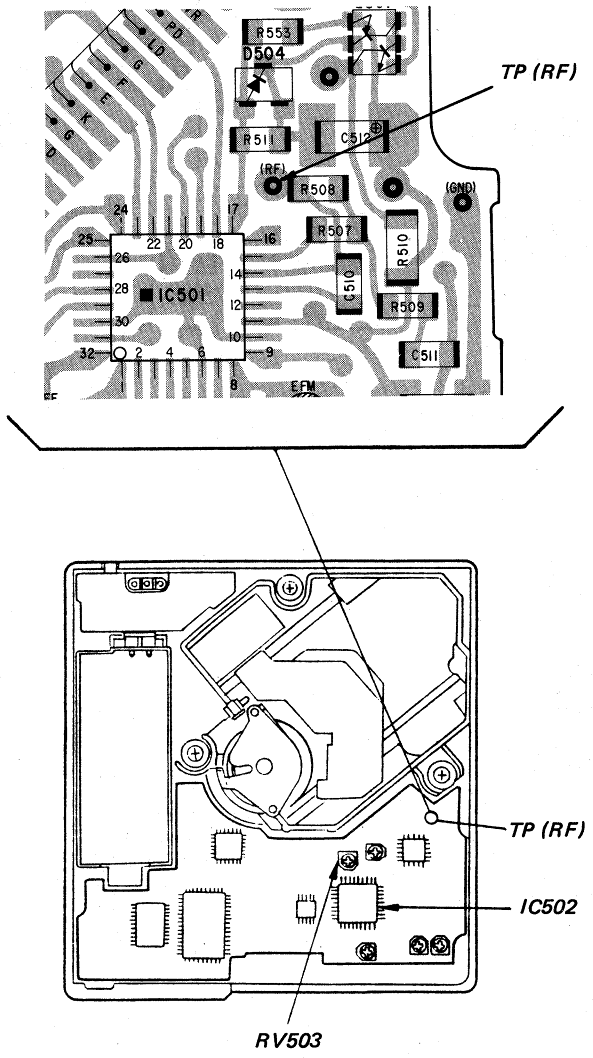
When observing the eye pattern, set the oscilloscope for AC range and raise vertical sensitivity.

8. Unplug the external power supply to stop spindle motor from rotating and remove the disc.

oscilloscope reading	adjustment
more than +50 mV	Not adjust again.
+50 mV ~ +20 mV	Adjust RV503 again for +50 mV reading on oscilloscope.
+20 mV ~ −20 mV	Adjust RV503 again for −20 mV reading on oscilloscope.
less than −20 mV	Not adjust again.

9. Remove the disc and connect the oscilloscope to main board IC502 ㊽ (FE).
10. Adjust RV503 again refering to the table followed.
11. After adjustment, release service mode (see page 6, 7).

Adjustment Location: servo board


TP (RF)
R553
D504
R511
C512
(RF)
R508
(GND)
R507
R510
IC501
C510
R509
C511
EFM
TP (RF)
IC502
RV503

Reference

Focus/Tra

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from this a
Focus/trac
(vertical a
and metch
However,
the point v

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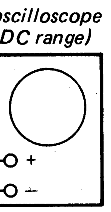
  operate
- When g
  nical sh

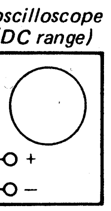
This adjus
the follow

- optic
- RV5
- RV5

Be careful
and RV50

orizontally.


scilloscope
DC range)
O +
O –


scilloscope
DC range)
O +
O –

(see page 6, 7).

servo board test point

to move the UPF to to the music area on bility of the eye pat-

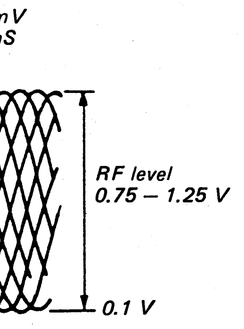
d close the top panel.

h to focus on, and racking and sled are

n. (Tracking and sled

scilloscope waveform d eye pattern means in the center of the nguished.

rm (eye pattern)



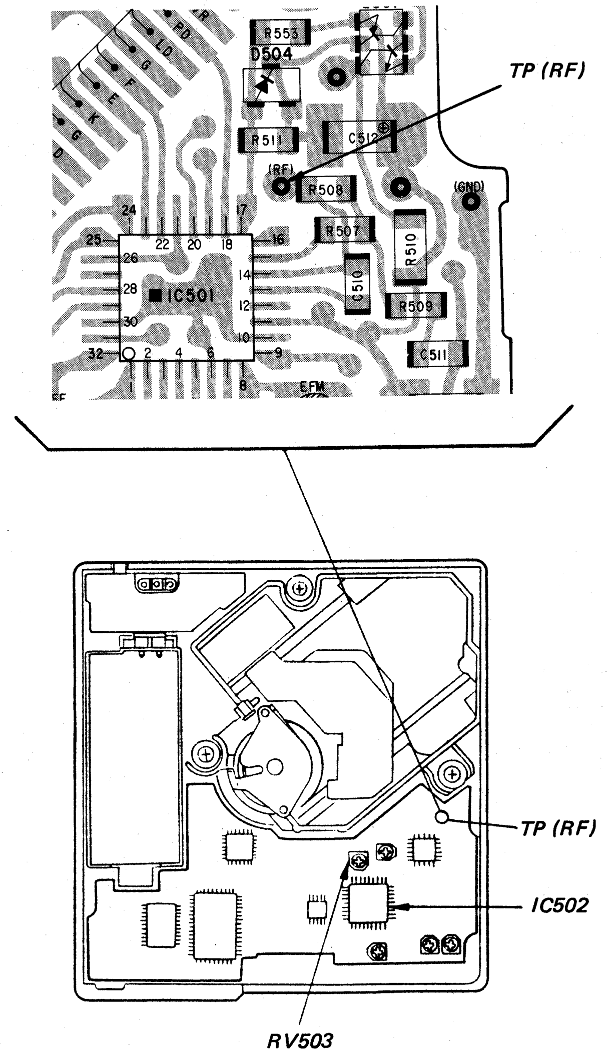
ttern, set the oscillo- vertical sensitivity.

8. Unplug the external power supply to stop spindle motor from rotating and remove the disc.

oscilloscope reading	adjustment
more than +50 mV	Not adjust again.
+50 mV ~ +20 mV	Adjust RV503 again for +50 mV reading on oscilloscope.
+20 mV ~ –20 mV	Adjust RV503 again for –20 mV reading on oscilloscope.
less than –20 mV	Not adjust again.

9. Remove the disc and connect the oscilloscope to main board IC502 (48) (FE).
10. Adjust RV503 again refering to the table followed.
11. After adjustment, release service mode (see page 6, 7).

Adjustment Location: servo board


TP (RF)
R553
D504
R511
C512
(RF)
R508
(GND)
R507
R510
C510
R509
C511
IC501
EFM
TP (RF)
IC502
RV503

Reference

Focus/Tracking Gain Adjustment

A frequency responce analyzer or CD jig is necessary in order to perform this adjustment exactly.
However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perfrom this adjustment.
Focus/tracking gain determines the pick-up followup (vertical and horizontal) relative to mechanical noise and metchnical shock when the 2-axis device operate. However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is high, the noise when the 2-axis device operates increases.
- When gain is low, it is more susceptible to mechanical shock and skipping occurs more easily.

This adjustment is to be performed when replacing the following parts:

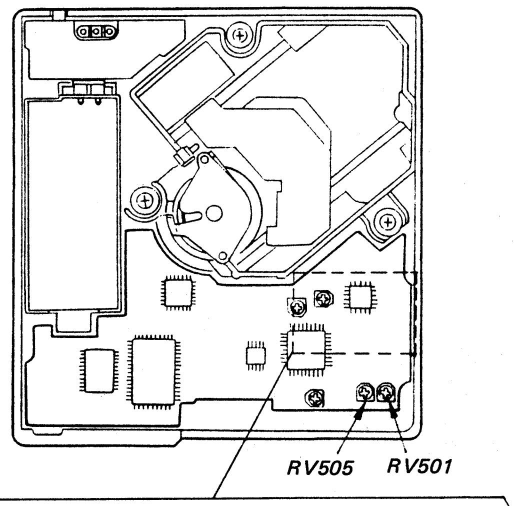
- optical pick-up block
- RV505 (focus gain VR)
- RV501 (tracking gain VR)

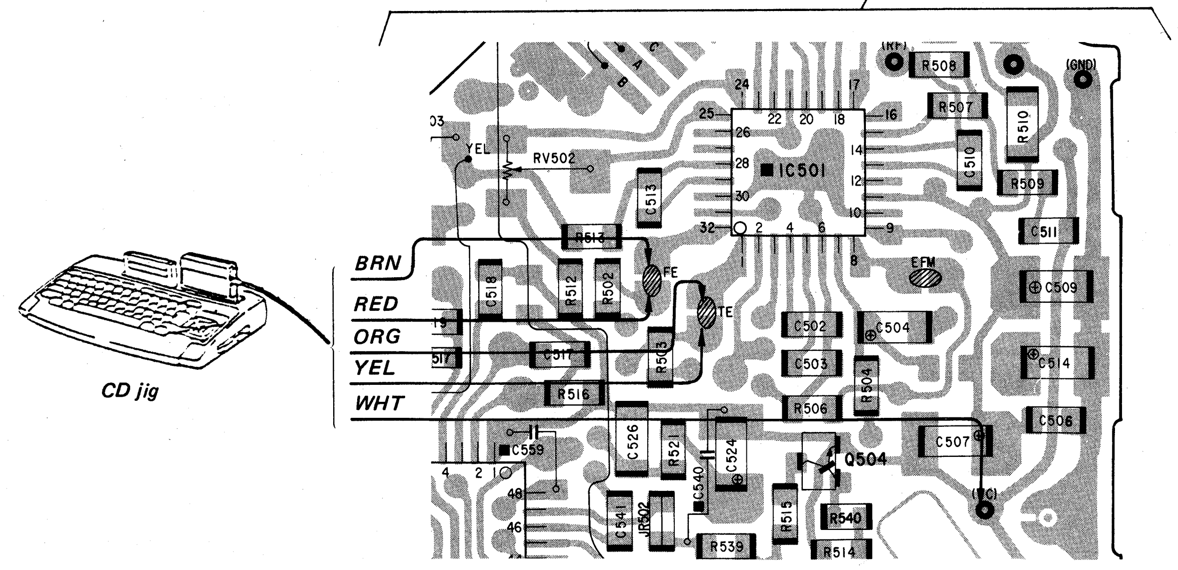
Be careful not to move RV505 (focus gain volume) and RV501 (tracking gain volume) ordinarily.

On this set, it is very difficult to simplify this adjustment. For those sets on which symptoms such as "occasional skipping" are hard to discover, or it is hard to tell if the set has been repaired, use the CD jig and perform this adjustment. Refer to the diagram below for connection of the CD jig. The adjustment procedure is described in the separate CD Jig Instruction Manual.

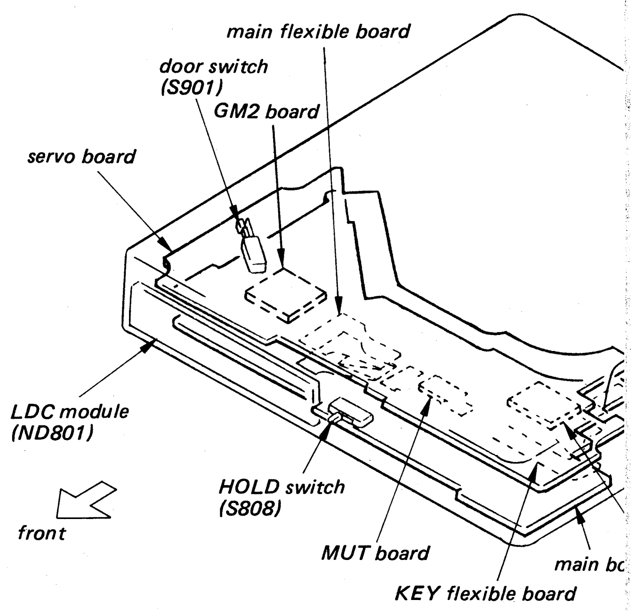
CD Jig Connecting Procedure:
Remove the solder jumpers at the TE and FE locations and connect the DC jig.
(Connect the points on both TE and FE located on the side of IC501 to the output to the CD jig, and points located on the side of volumes to the input from the CD jig.)

– *servo board* –


RV505
RV501

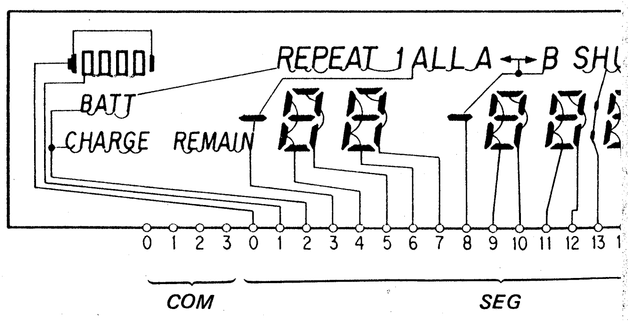

CD jig
BRN
RED
ORG
YEL
WHT
YEL
RV502
IC501
R508
R507
R510
C510
R509
C511
(GND)
C513
R513
C518
R512
R502
FE
TE
R503
EFM
C509
C502
C504
C503
C514
C517
R516
R506
R504
C506
C507
C559
C526
R521
C524
C540
Q504
C541
JR502
R515
R540
R539
R514

- **PC Board/Switch/Motor Layouts**


main flexible board
door switch
(S901)
GM2 board
servo board
LDC module
(ND801)
front
HOLD switch
(S808)
MUT board
main bc
KEY flexible board

- **LCD MODULE**

SEGMENT


REPEAT 1 ALL A↔B SH
BATT
CHARGE
REMAIN
0 1 2 3 0 1 2 3 4 5 6 7 8 9 10 11 12 13 1
COM
SEG

sary
ght-
per-
vup
oise
ate.
s at
vice
cha-
cing
me)

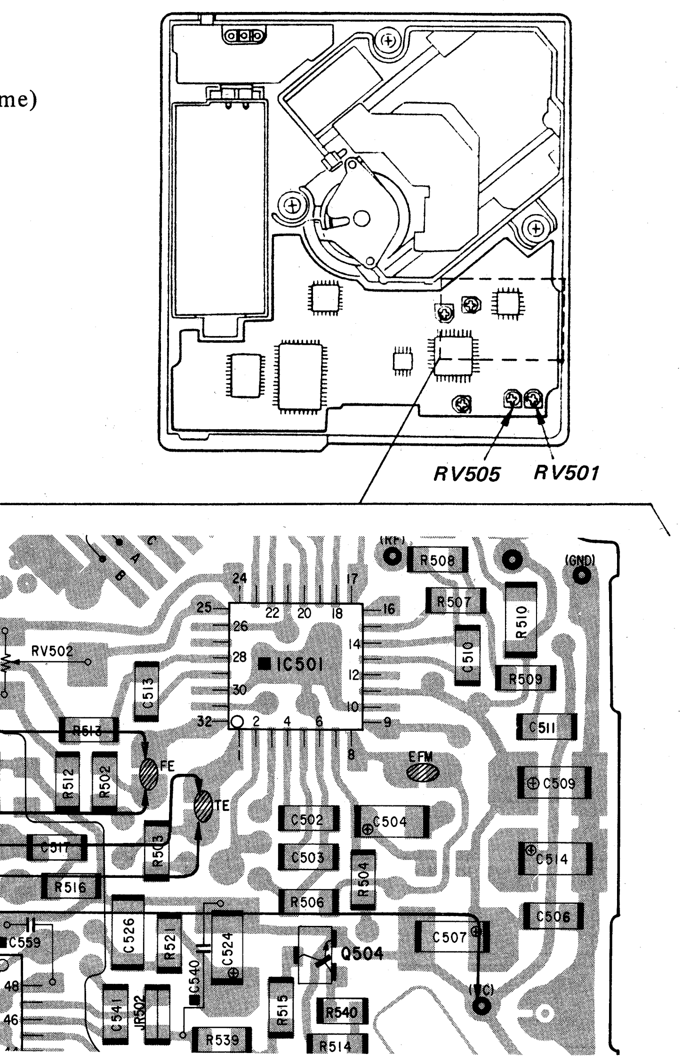
On this set, it is very difficult to simplify this adjustment. For those sets on which symptoms such as "occasional skipping" are hard to discover, or it is hard to tell if the set has been repaired, use the CD jig and perform this adjustment. Refer to the diagram below for connection of the CD jig. The adjustment procedure is described in the separate CD Jig Instruction Manual.

CD Jig Connecting Procedure:

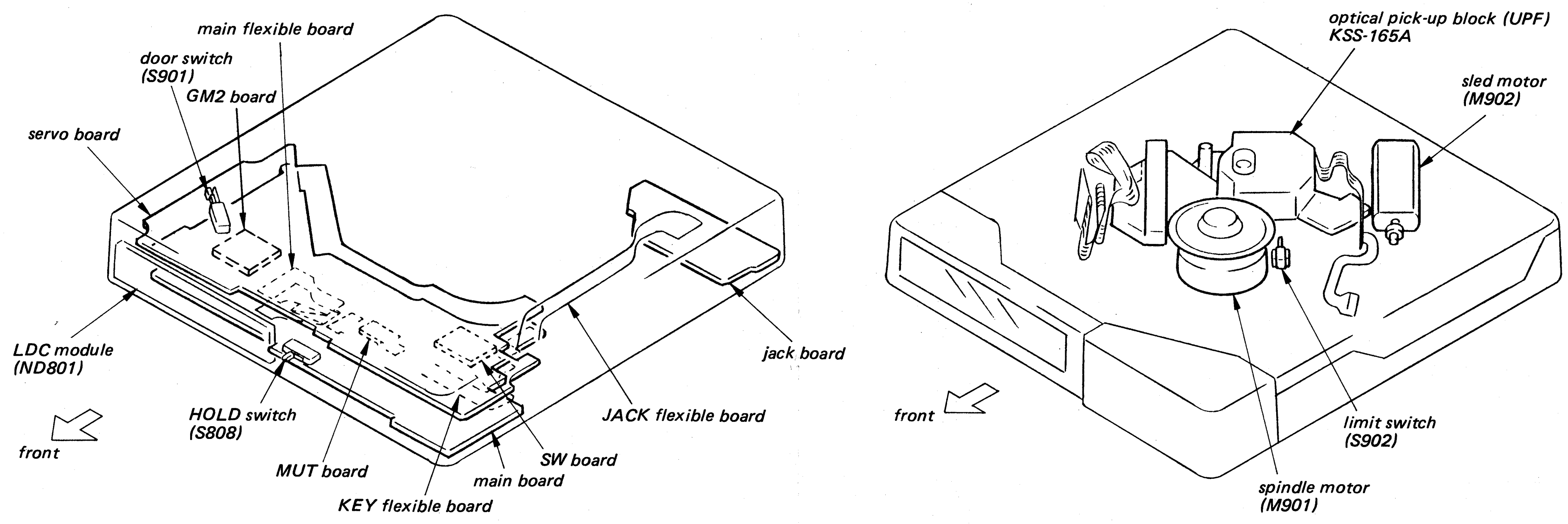
Remove the solder jumpers at the TE and FE locations and connect the DC jig.

(Connect the points on both TE and FE located on the side of IC501 to the output to the CD jig, and points located on the side of volumes to the input from the CD jig.)

– servo board –

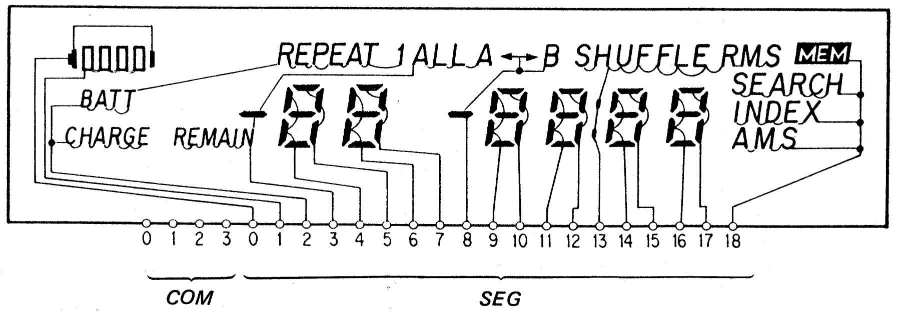

RV505
RV501
(RF)
R508
(GND)
R507
R510
C510
R509
24
17
25
26
22
20
18
16
14
12
10
9
28
30
32
2
4
6
8
IC501
RV502
C513
R513
R512
R502
FE
TE
EFM
C511
C509
C502
C504
C503
C517
R503
R516
R506
R504
C514
C506
C559
C526
R521
C524
C507
Q504
C540
R515
R540
(TC)
48
46
C541
JR502
R539
R514

- **PC Board/Switch/Motor Layouts**

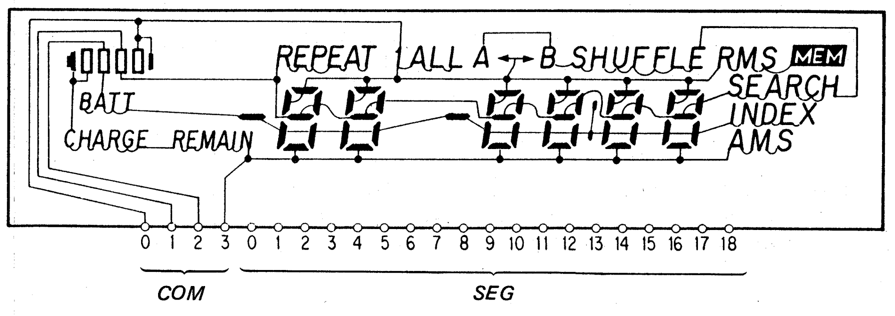

main flexible board
door switch
(S901)
GM2 board
servo board
LDC module
(ND801)
front
HOLD switch
(S808)
MUT board
KEY flexible board
main board
SW board
JACK flexible board
jack board
optical pick-up block (UPF)
KSS-165A
sled motor
(M902)
front
limit switch
(S902)
spindle motor
(M901)

- **LCD MODULE**

SEGMENT


REPEAT 1ALL A↔B SHUFFLE RMS MEM
BATT
CHARGE
REMAIN
SEARCH
INDEX
AMS
0 1 2 3 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
COM
SEG

COMMON


REPEAT 1ALL A↔B SHUFFLE RMS MEM
BATT
CHARGE
REMAIN
SEARCH
INDEX
AMS
0 1 2 3 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
COM
SEG

Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: $\mu\mu$F 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $^1/_4$W or less unless otherwise specified.
- % : indicates tolerance.
- ▬ : B+ bus.
- ☐ : adjustment for repair.
- Voltages and waveforms current are measured with top panel closed.
- Power voltage is dc 9 V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground in service mode.
  no mark: stop
  ( ): play
- Voltages are taken with a VOM (50 kΩ/V).
  Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : CD
- Switch

Ref. No.	Switch	Position
S801	■	OFF
S802	▶/II	OFF
S803	PLAY MODE	OFF
S804	REMAIN/ENTER	OFF
S805	KEY MODE	OFF
S806	▶▶I	OFF
S807	I◀◀	OFF
S808	HOLD	ON
S901	LIMIT	OFF
S902	DOOR	ON

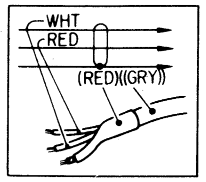
See page 6, 7 for setup of service mode.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note on Mounting Diagram:

- Color code or sleeving over the end of the jacket.


WHT
RED
(RED)(GRY)

- ○—— : parts extracted from the component side.
- ●—— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ⊗ : Through hole.
- ▨ : Pattern on the side which is seen.
- ▨ : Pattern of the rear side.
- ☐ : Chip components extracted from the rear side.

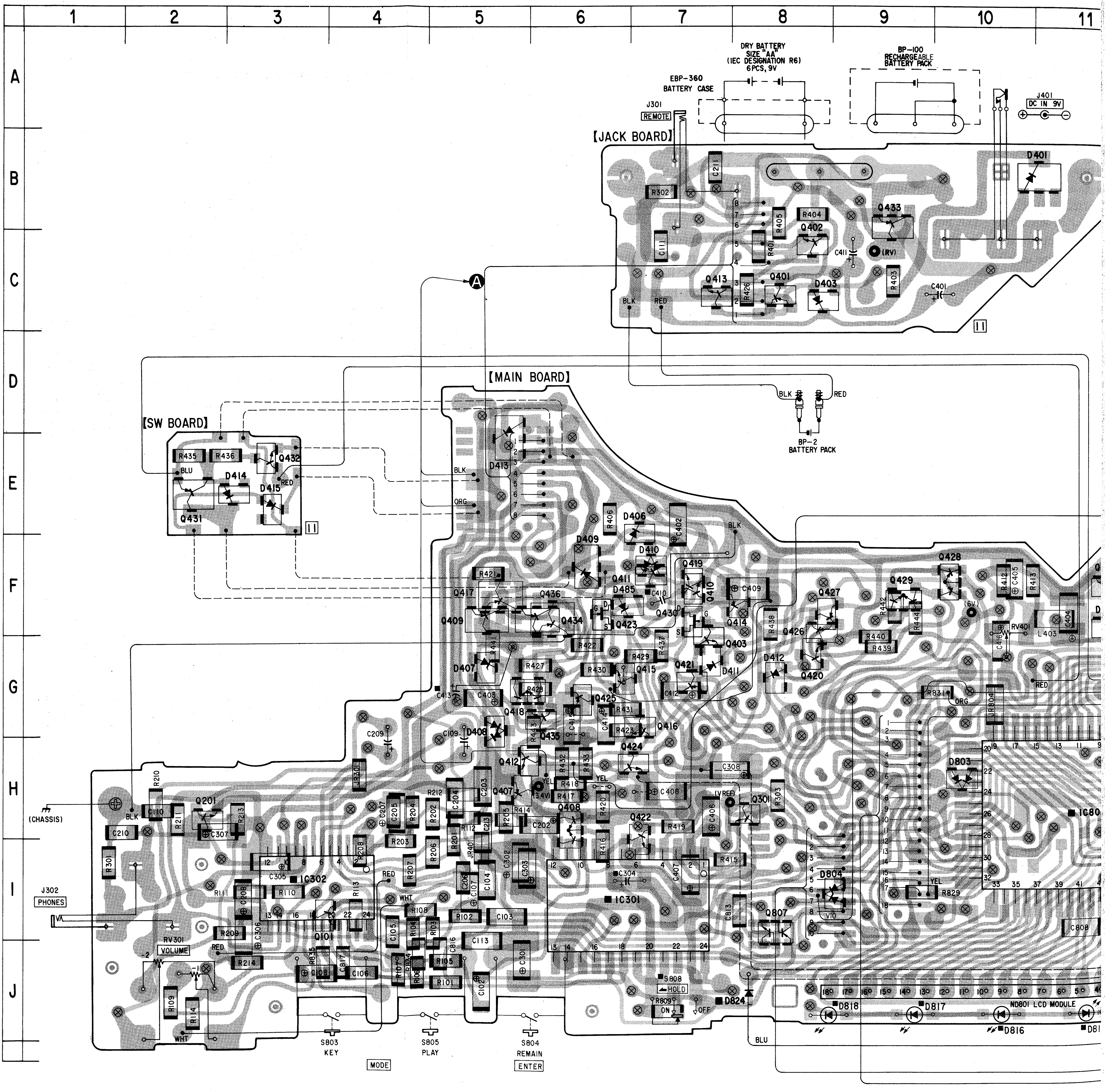
SECTION 2 DIAGRAMS

2-1. MOUNTING DIAGRAM

- **See page 24 for Semiconductor Lead Layouts.**

• SEMICONDUCTOR LOCATION

Ref. No.	Location	Ref. No.	Location
D401	B-10	Q101	I-3
D403	C-8	Q201	H-2
D405	F-11	Q301	H-8
D406	E-7	Q401	C-8
D407	G-5	Q402	C-8
D408	G-5	Q403	G-7
D409	F-6	Q405	F-12
D410	F-7	Q406	F-11
D411	G-7	Q407	H-5
D412	G-8	Q408	H-6
D413	E-5	Q409	F-5
D414	E-3	Q410	F-7
D415	E-3	Q411	F-7
D485	F-6	Q412	H-5
D501	G-22	Q413	C-7
D502	G-21	Q414	F-8
D503	G-21	Q415	G-6
D504	E-27	Q416	G-7
D505	I-25	Q417	F-5
D802	G-12	Q418	G-5
D803	H-10	Q419	F-7
D804	I-9	Q420	G-8
D805	I-13	Q421	G-7
D806	I-13	Q422	H-7
D807	I-13	Q423	F-6
D808	G-13	Q424	H-7
D809	E-12	Q425	G-6
D810	F-12	Q426	F-8
D811	H-14	Q427	F-8
D813	F-12	Q428	F-10
D814	D-13	Q429	F-9
D815	E-13	Q430	F-7
D816	J-10	Q431	E-2
D817	J-9	Q432	E-3
D818	J-9	Q433	B-9
D819	J-11	Q434	F-6
D820	J-12	Q435	G-6
D821	J-13	Q436	F-6
D822	I-13	Q501	D-27
D823	H-14	Q502	I-26
D824	J-8	Q503	I-27
D825	J-12	Q504	G-26
		Q801	F-12
IC301	I-6	Q803	J-13
IC302	I-3	Q804	G-13
IC501	F-26	Q805	I-12
IC502	H-24	Q806	F-16
IC503	H-22	Q807	I-8
IC504	F-20	Q808	E-13
IC505	G-22	Q809	D-23
IC601	I-19	Q810	D-23
IC602	I-17		
IC801	H-11		
IC802	F-13		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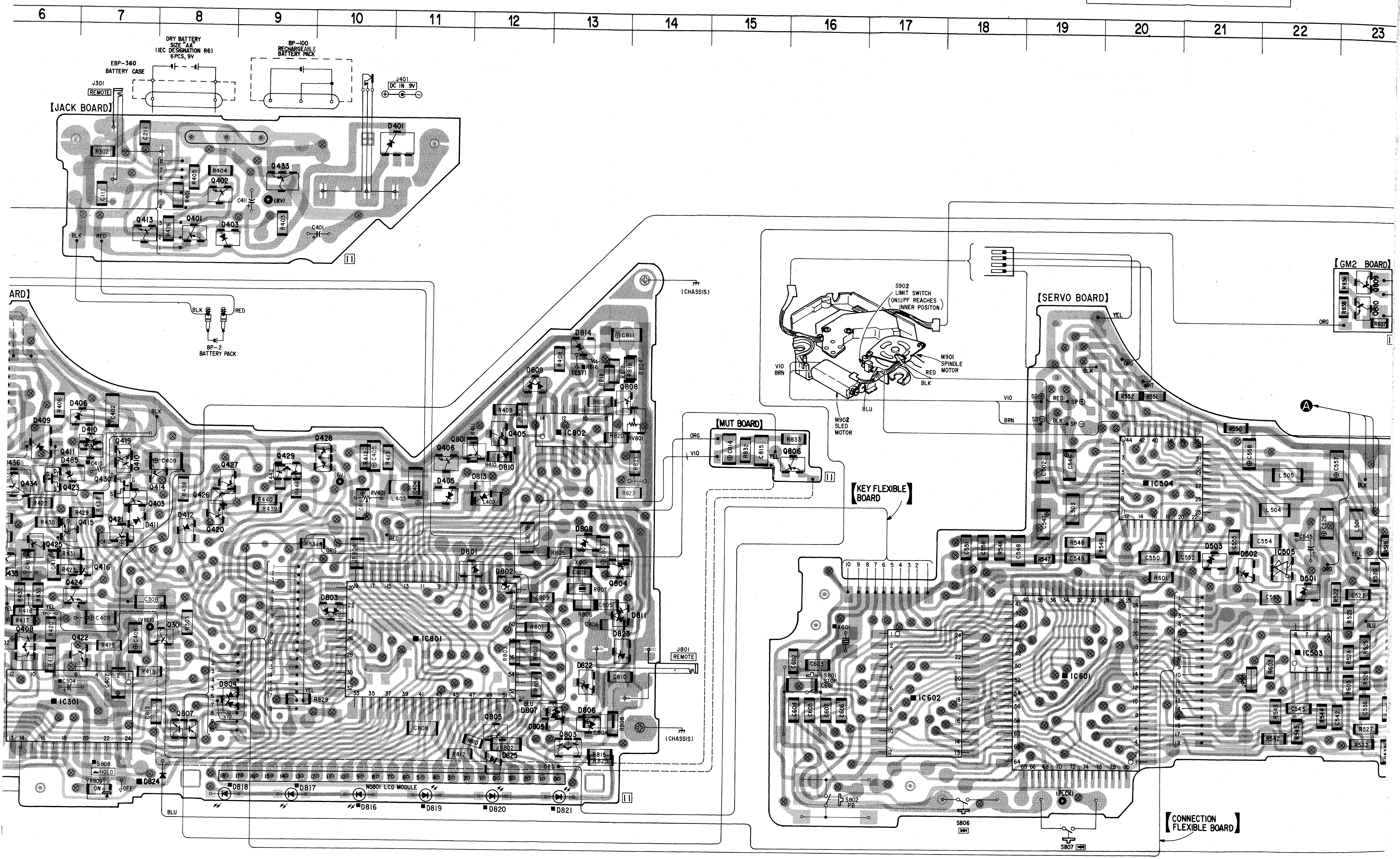
11
A
B
C
D
E
F
G
H
I
J
DRY BATTERY SIZE "AA" (IEC DESIGNATION R6) 6PCS, 9V
EBP-360 BATTERY CASE
BP-100 RECHARGEABLE BATTERY PACK
J301 REMOTE
J401 DC IN 9V
【JACK BOARD】
D401
R302
C211
C111
R405
R404
Q402
Q433
R401
C411
(RV)
Q413
R426
Q401
D403
R403
C401
BLK
RED
【MAIN BOARD】
BLK
RED
BP-2 BATTERY PACK
【SW BOARD】
R435
R436
Q432
BLU
D414
RED
D415
Q431
D413
ORG
R406
D406
C402
D409
D410
Q419
Q411
D485
Q417
Q436
Q430
Q410
C409
Q409
Q434
Q423
Q414
Q403
R438
Q426
Q427
Q429
Q428
R412
C405
R413
R440
R439
RV401
L403
R442
R421
R422
R429
R437
D412
Q420
D407
R427
R430
Q415
Q421
D411
C413
C403
R428
Q425
C412
R831
ORG
Q418
R431
R423
Q416
C209
C109
D408
Q435
Q424
Q412
C308
D803
R210
Q201
YEL
R418
R417
C408
(VREF)
Q301
R303
IC801
BLK
C110
R21
R213
Q407
R414
Q408
R420
Q422
R419
C406
C210
C307
C207
C205
R204
R202
C204
C203
R212
C213
R205
C202
R416
R415
(CHASSIS)
R301
R203
R206
R401
C302
C303
R207
IC302
C305
R110
R13
R111
C108
C304
IC301
C407
D804
YEL
R829
J302 PHONES
RED
WHT
R108
R102
C103
C104
C813
Q807
V10
C808
C106
R209
Q101
C105
R104
R103
C816
C113
RV301 VOLUME
RED
R214
R105
R101
C301
R835
C817
C108
C106
R107
R106
C102
S808 HOLD
ON
OFF
R809
D824
D818
D817
ND801 LCD MODULE
D816
R109
R114
WHT
S803 KEY
S805 PLAY
S804 REMAIN
MODE
ENTER
BLU


6
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13
14
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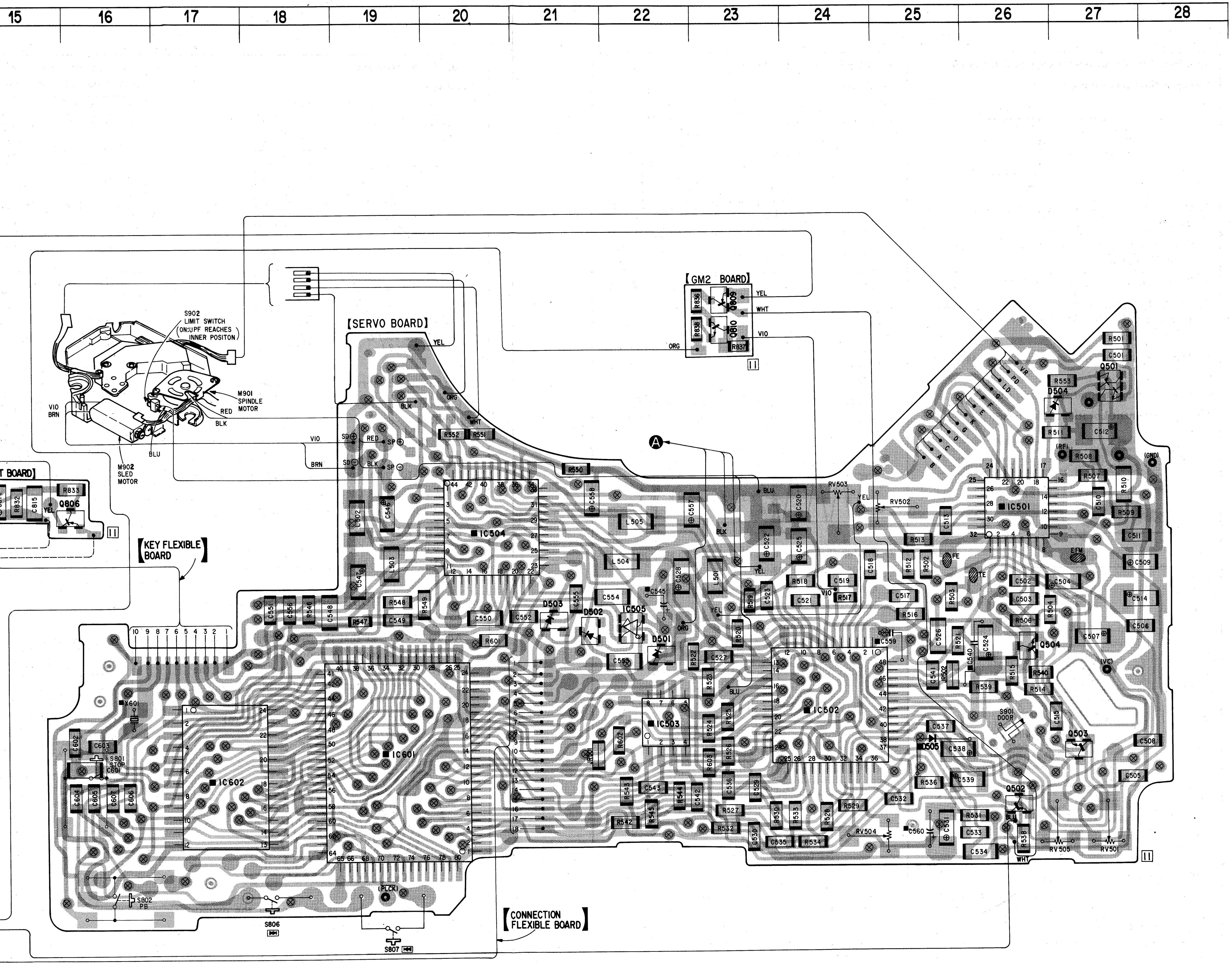
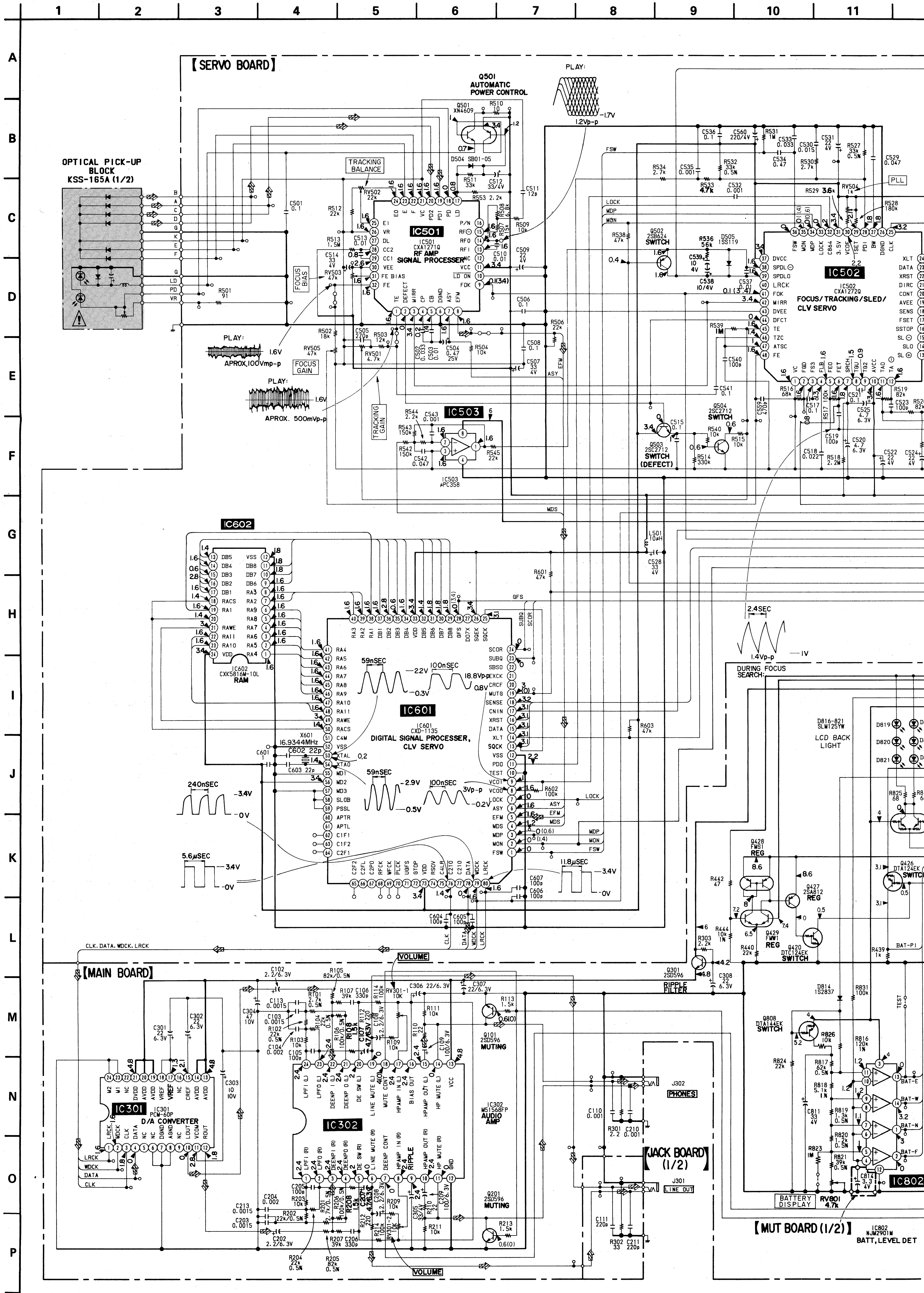
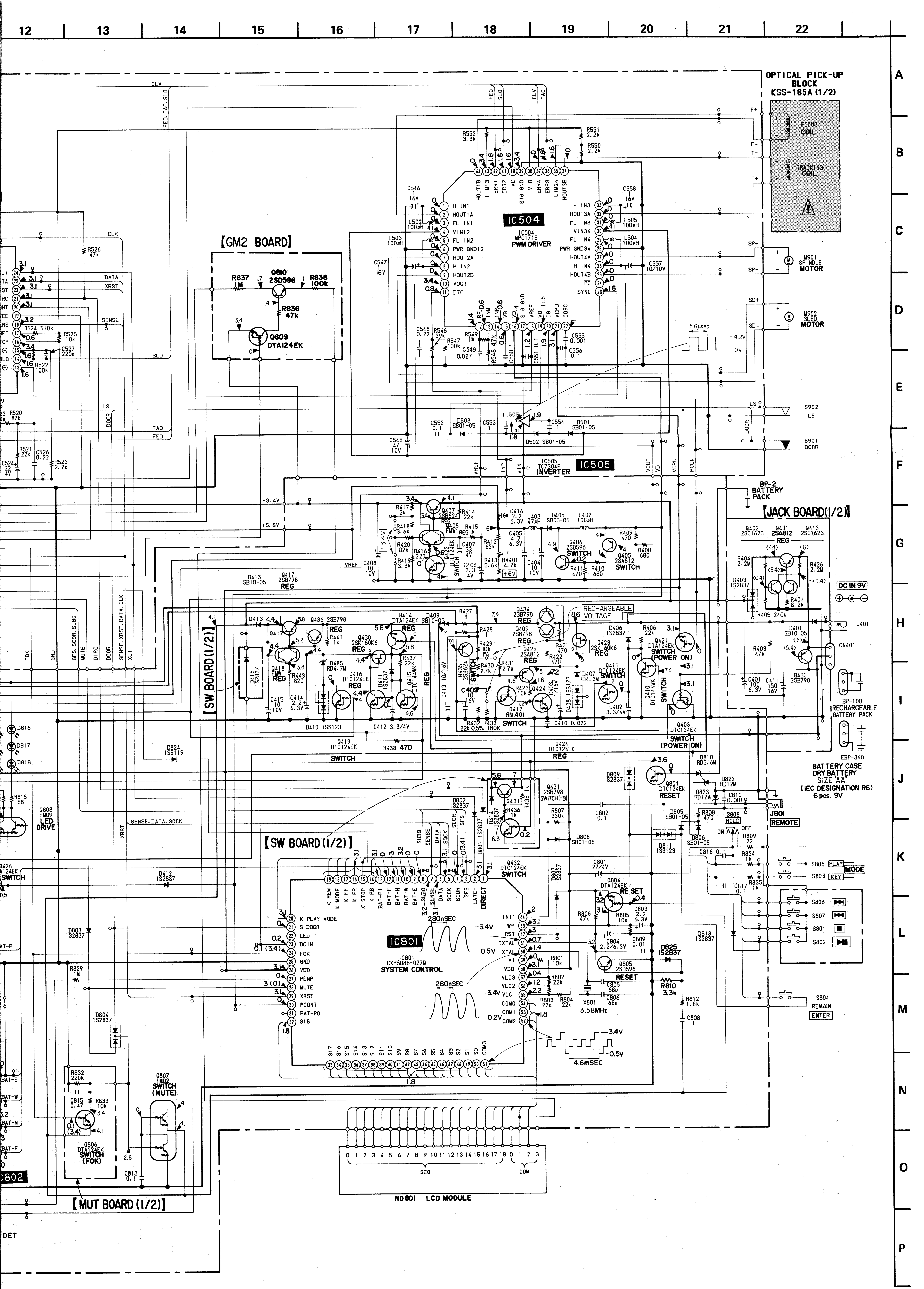
16
17
18
19
20
21
22
23
DRY BATTERY SIZE "AA" (IEC DESIGNATION R6) 6PCS, 9V
BP-100 RECHARGEABLE BATTERY PACK
EBP-360 BATTERY CASE
J301 REMOTE
J401 DC IN 9V
【JACK BOARD】
BP-2 BATTERY PACK
(CHASSIS)
S902 LIMIT SWITCH (ON:UPF REACHES INNER POSITON)
M901 SPINDLE MOTOR
M902 SLED MOTOR
【MUT BOARD】
【SERVO BOARD】
【GM2 BOARD】
【KEY FLEXIBLE BOARD】
【CONNECTION FLEXIBLE BOARD】
IC801
IC802
IC301
IC601
IC602
IC503
IC504
IC505
J801 REMOTE
ND801 LCD MODULE
S808 HOLD
S801 STOP
S802 PB
S806
S807
(PLCK)
(TEST)
(VREF)
(RV)
BLK
RED
ORG
YEL
VIO
BRN
BLU
WHT


15
16
17
18
19
20
21
22
23
24
25
26
27
28
S902
LIMIT SWITCH
(ON:UPF REACHES INNER POSITON)
M901
SPINDLE
MOTOR
M902
SLED
MOTOR
VIO
BRN
RED
BLK
BLU
YEL
ORG
WHT
SD⊕
SD⊖
SP⊕
SP⊖
【SERVO BOARD】
【GM2 BOARD】
R836
R838
R837
Q809
Q810
T BOARD】
R833
R832
C815
Q806
【KEY FLEXIBLE BOARD】
【CONNECTION FLEXIBLE BOARD】
IC501
IC502
IC503
IC504
IC505
IC601
IC602
Q501
Q502
Q503
Q504
D501
D502
D503
D504
D505
L501
L502
L503
L504
L505
RV501
RV502
RV503
RV504
RV505
X601
S801
STOP
S802
PB
S806
S807
S901
DOOR
(PLCK)
(RF)
(GND)
(VC)
FE
TE
EFM
A
VR
PD
LD
F
E
B
C
D
A
R501
C501
R553
R511
C512
R508
R507
R510
C510
R509
C511
C509
C514
C506
C507
C508
C505
R513
R512
R502
R503
R504
C513
C502
C503
C504
R506
R505
R518
C519
C521
R517
C517
R516
C516
C518
C520
C522
C523
C525
C526
R521
C524
C540
C541
R502
R539
R515
R540
R514
C515
C537
C538
R536
C539
C532
R531
C533
C534
R538
C531
C560
R529
R528
R533
R530
C535
R534
R527
R532
C536
R526
R524
R525
R523
R522
C527
R520
R519
C528
C545
C557
C558
R550
R551
R552
C546
C547
C551
C553
C554
C555
C550
C552
R601
C556
R546
C548
R547
R548
C549
R549
C543
C544
R542
R543
R545
C542
R603
C530
R602
R501
C602
C603
C604
C605
C606
C607
C601

2-2. SCHEMATIC DIAGRAM • See page 16 for notes.



1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
【SERVO BOARD】
OPTICAL PICK-UP BLOCK KSS-165A (1/2)
Q501 AUTOMATIC POWER CONTROL
Q501 XN4609
D504 SB01-05
PLAY:
1.2Vp-p
-1.7V
TRACKING BALANCE
FOCUS BIAS
FOCUS GAIN
TRACKING GAIN
PLAY: 1.6V APROX.100Vmp-p
PLAY: 1.6V APROX. 500mVp-p
IC501 CXA1271Q RF AMP SIGNAL PROCESSER
IC503 μPC358
Q502 2SB624 SWITCH
Q503 2SC2712 SWITCH (DEFECT)
Q504 2SC2712 SWITCH
PLL
IC502 CXA1272Q FOCUS/TRACKING/SLED/CLV SERVO
IC602 CXK5816M-10L RAM
IC601 CXD-1135 DIGITAL SIGNAL PROCESSER, CLV SERVO
X601 16.9344MHz
59nSEC
100nSEC
18.8Vp-p
240nSEC
5.6μSEC
11.8μSEC
2.4SEC
1.4Vp-p
DURING FOCUS SEARCH
CLK. DATA. WDCK. LRCK
L501 10μH
【MAIN BOARD】
VOLUME
IC301 PCM-60P D/A CONVERTER
IC302 M51568FP AUDIO AMP
Q101 2SD596 MUTING
Q201 2SD596 MUTING
Q301 2SD596 RIPPLE FILTER
J302 PHONES
J301 LINE OUT
【JACK BOARD (1/2)】
D816-821 SLM125YW LCD BACK LIGHT
Q428 FMS1 REG
Q427 2SA812 REG
Q429 FMW1 REG
Q420 DTC124EK SWITCH
Q426 DTA124EK SWITCH
Q808 DTA144EK SWITCH
D814 1S2837
BATTERY DISPLAY
RV801 4.7k
【MUT BOARD (1/2)】
IC802 NJM2901M BATT, LEVEL DET
IC802


12
13
14
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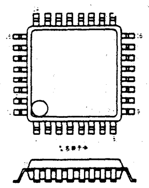
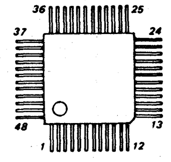
16
17
18
19
20
21
22
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
OPTICAL PICK-UP BLOCK KSS-165A (1/2)
FOCUS COIL
TRACKING COIL
M901 SPINDLE MOTOR
M902 SLED MOTOR
S902 LS
S901 DOOR
IC504
IC504 MPC1715 PWM DRIVER
IC505
IC505 TC7S04F INVERTER
【GM2 BOARD】
Q810 2SD596
Q809 DTA124EK
R837 1M
R838 100k
R836 47k
BP-2 BATTERY PACK
【JACK BOARD(1/2)】
DC IN 9V
J401
CN401
BP-100 RECHARGEABLE BATTERY PACK
EBP-360 BATTERY CASE DRY BATTERY SIZE "AA" (IEC DESIGNATION R6) 6 pcs. 9V
【SW BOARD(1/2)】
RECHARGEABLE VOLTAGE
IC801
IC801 CXP5086-027Q SYSTEM CONTROL
280nSEC
4.6mSEC
5.6μsec
X801 3.58MHz
J801 REMOTE
S805 PLAY MODE
S803 KEY
S806
S807
S801
S802
S804 REMAIN ENTER
S808 HOLD
ND801 LCD MODULE
SEG
COM
【MUT BOARD(1/2)】
Q807 IMD2 SWITCH (MUTE)
Q806 DTA124EK SWITCH (FOK)
Q803 FMG9 LED DRIVE
Q801 DTC124EK RESET
Q804 DTA124EK RESET
Q805 2SD596 RESET
Q403 DTC124EK SWITCH (POWER ON)
Q421 DTA124EK SWITCH (POWER ON)
Q431 2SB798 SWITCH(+B)
Q432 DTC124EK SWITCH
Q424 DTC124EK REG
Q419 DTC124EK SWITCH
Q417 2SB798 REG
Q434 2SB798 REG
Q409 2SB798 REG
Q425 2SA812 REG
Q423 2SK160K6 REG
Q430 2SK160K6 REG
Q414 DTA124EK REG
Q418 FMW1 REG
Q416 DTC124EK REG
Q412 RN1401 SWITCH
Q411 DTC124EK SWITCH
Q435 2SB624 SWITCH
Q406 2SD596 SWITCH
Q405 2SA812 SWITCH
Q407 2SB624
Q408 FMW1 REG
Q402 2SC1623
Q401 2SA812 REG
Q413 2SC1623
Q433 2SB798
+3.4V
+5.8V
CLV
FEO.TAO.SLO
CLK
DATA
XRST
SENSE
SLO
LS
DOOR
TAO
FEO
VREF
INP
VIN
VOUT
VD
VCPU
PCON
FOK
GND
GFS.SCOR.SUBQ
MUTE
DIRC
DOOR
SENSE.XRST.DATA.CLK
XLT
SENSE.DATA.SQCK
XRST
K PLAY MODE
S DOOR
LED
DC IN
FOK
GND
VDD
PENP
MUTE
XRST
PCONT
BAT-PO
S18
INT1
WP
RST
EXTAL
XTAL
V1
VDD
VLC3
VLC2
VLC1
COM0
COM1
COM2
DET

• Semiconductor Lead Layouts

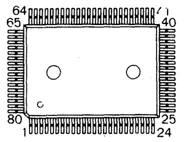
CXA1271Q



CXA1272Q-Z

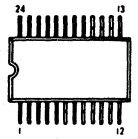

36
25
37
24
48
13
1
12

CXD1135Q


64
1
65
40
80
25
24

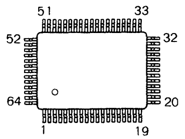
MARKING SIDE VIEW

CXK5816M-10L
M51568FP
PCM60P



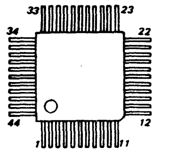
(Top view)

CXP5816-027Q

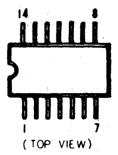

51
33
52
32
64
20
1
19

TOP VIEW

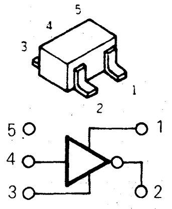
MPC1715


33
23
34
22
44
12
1
11

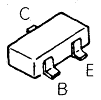
NJM2901M


14
8
1
7
(TOP VIEW)

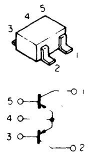
TC7S04F-TE85R


5
4
3
2
1
5
4
3
1
2

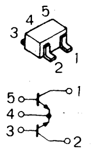
DTA124EK
DTA144EK
DTC124EK
DTC144WK
2SA812
2SA812-M5
2SB624-BV4
2SC1623
2SC2712-G
2SD596



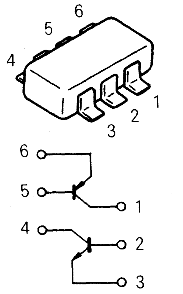
FMS1


5
4
3
2
1
5
4
3
1
2

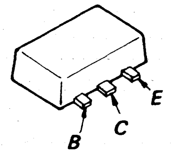
FMW1


5
4
3
2
1
5
4
3
1
2

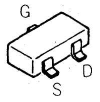
1MD2T109
1MZ1T108


6
5
4
1
2
3
6
5
4
1
2
3

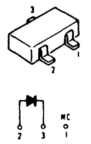
2SB798



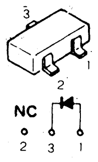
2SK160-K6



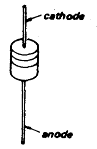
RD4.3M-B2
RD4.7M-B2
RD5.6M-B2
SB01-05CP



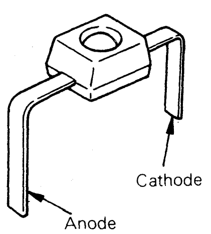
SB05-05CP
SB10-05PCP



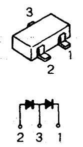
1SS119


cathode
anode

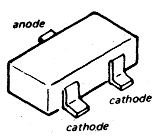
SLM125YW


Cathode
Anode

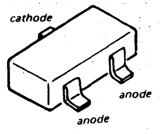
1SS123



1S2835

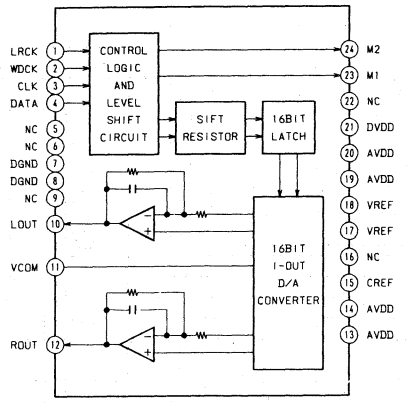

anode
cathode
cathode

1S2837

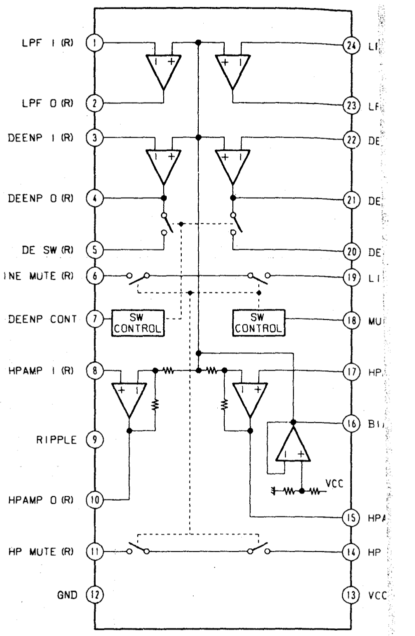

cathode
anode
anode

• IC Block Diagrams

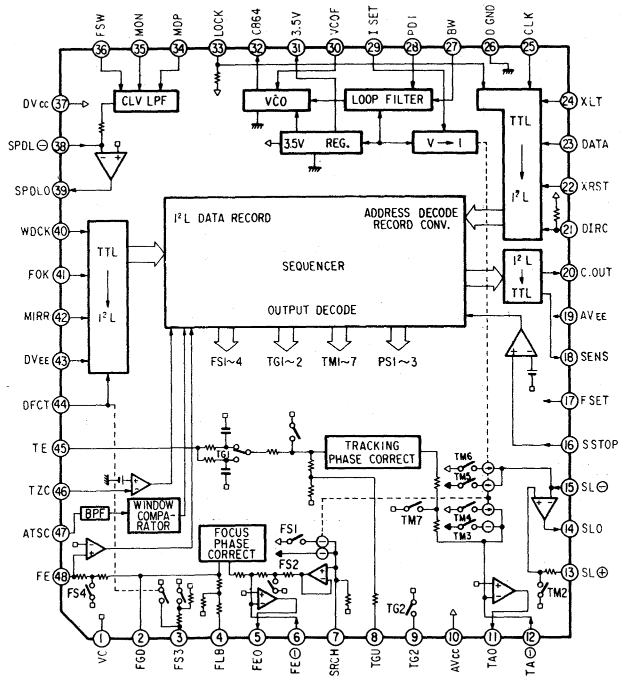
IC301
PCM -60P


LRCK ①
WDCK ②
CLK ③
DATA ④
NC ⑤
NC ⑥
DGND ⑦
DGND ⑧
NC ⑨
LOUT ⑩
VCOM ⑪
ROUT ⑫
CONTROL LOGIC AND LEVEL SHIFT CIRCUIT
SIFT RESISTOR
16BIT LATCH
16BIT I-OUT D/A CONVERTER
㉔ M2
㉓ M1
㉒ NC
㉑ DVDD
⑳ AVDD
⑲ AVDD
⑱ VREF
⑰ VREF
⑯ NC
⑮ CREF
⑭ AVDD
⑬ AVDD

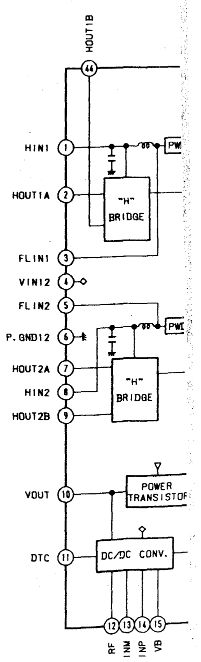
IC302
M51568FP

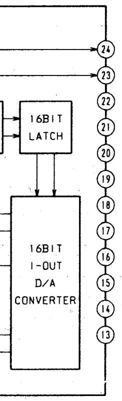

LPF I (R) ①
LPF O (R) ②
DEENP I (R) ③
DEENP O (R) ④
DE SW (R) ⑤
LINE MUTE (R) ⑥
DEENP CONT ⑦
HPAMP I (R) ⑧
RIPPLE ⑨
HPAMP O (R) ⑩
HP MUTE (R) ⑪
GND ⑫
SW CONTROL
SW CONTROL
VCC
㉔
㉓
㉒
㉑
⑳
⑲
⑱
⑰
⑯
⑮
⑭
⑬

IC502
CXA1272Q

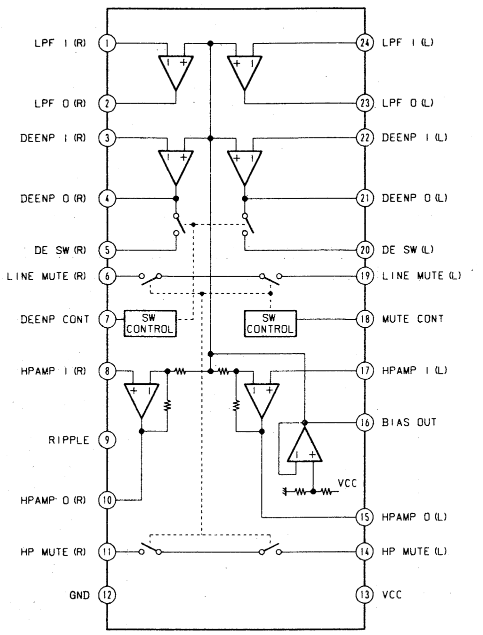

FSW ㊱
MON ㉟
MDP ㉞
LOCK ㉝
C864 ㉜
3.5V ㉛
VCOF ㉚
I SET ㉙
PDI ㉘
BW ㉗
D GND ㉖
CLK ㉕
DVcc ㊲
SPDL⊖ ㊳
SPDLO ㊴
WDCK ㊵
FOK ㊶
MIRR ㊷
DVEE ㊸
DFCT ㊹
TE ㊺
TZC ㊻
ATSC ㊼
FE ㊽
CLV LPF
VCO
LOOP FILTER
3.5V REG.
V→I
TTL
I²L
I²L DATA RECORD
ADDRESS DECODE RECORD CONV.
SEQUENCER
OUTPUT DECODE
FSI~4
TGI~2
TMI~7
PSI~3
TRACKING PHASE CORRECT
BPF
WINDOW COMPARATOR
FOCUS PHASE CORRECT
FS1
FS2
FS4
TM1
TM2
TM3
TM4
TM5
TM6
TM7
TG2
㉔ XLT
㉓ DATA
㉒ XRST
㉑ DIRC
⑳ C.OUT
⑲ AVEE
⑱ SENS
⑰ FSET
⑯ SSTOP
⑮ SL⊖
⑭ SLO
⑬ SL⊕
① VC
② FGD
③ FS3
④ FLB
⑤ FEO
⑥ FE⊖
⑦ SRCH
⑧ TGU
⑨ TG2
⑩ AVcc
⑪ TAO
⑫ TA⊖

IC504
MPC1715

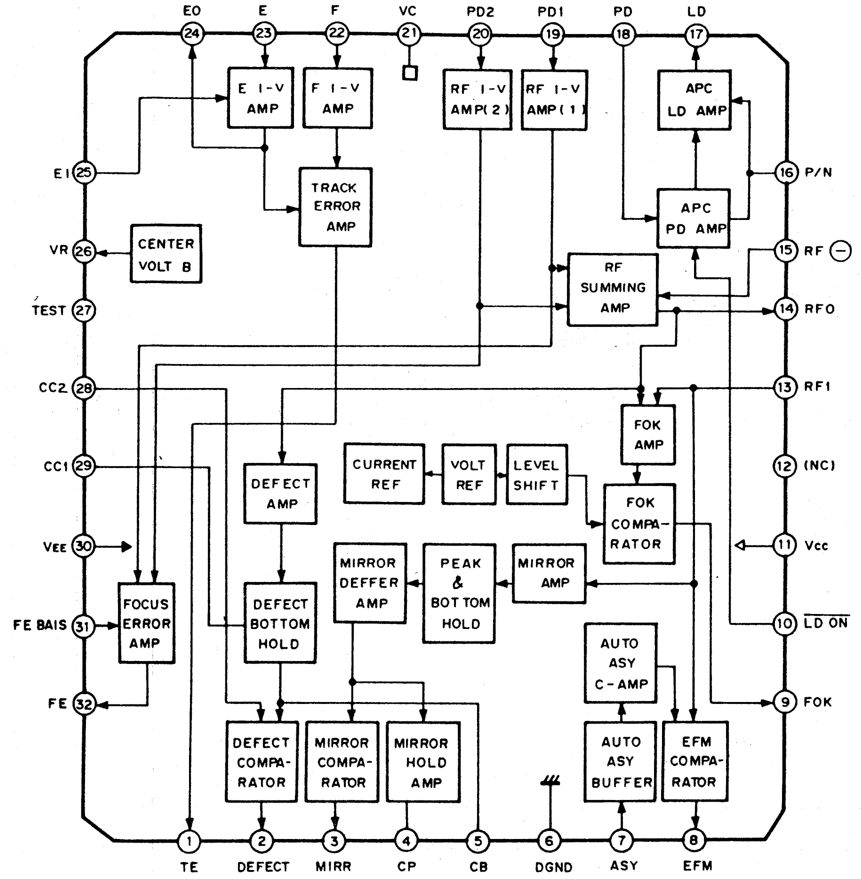

HOUT1B ㊹
HIN1 ①
HOUT1A ②
"H" BRIDGE
FLIN1 ③
VIN12 ④
FLIN2 ⑤
P.GND12 ⑥
HOUT2A ⑦
HIN2 ⑧
HOUT2B ⑨
"H" BRIDGE
VOUT ⑩
POWER TRANSISTOR
DTC ⑪
DC/DC CONV.
RF ⑫
INM ⑬
INP ⑭
VB ⑮


M2
M1
NC
DVDD
AVDD
AVDD
VREF
VREF
NC
CREF
AVDD
AVDD
16BIT LATCH
16BIT I-OUT D/A CONVERTER

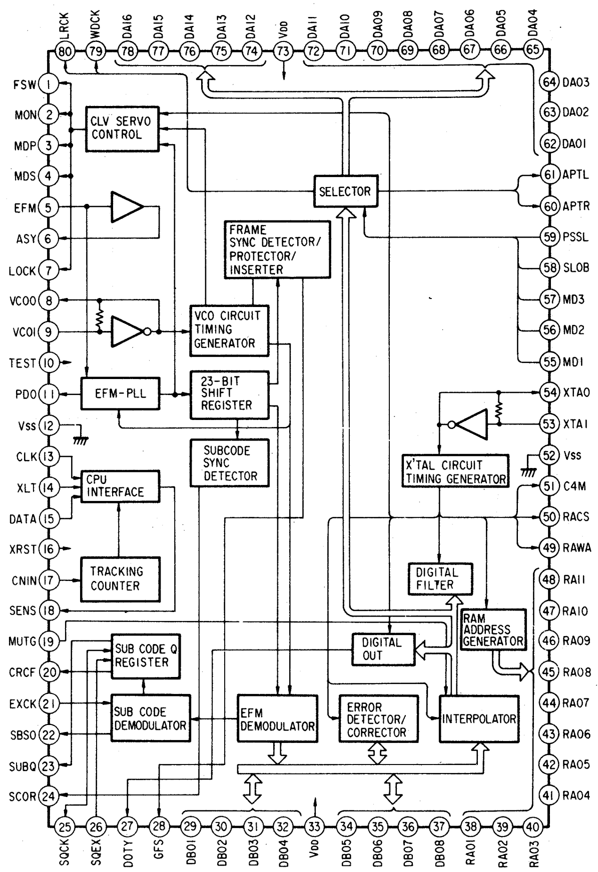
IC302
M51568FP

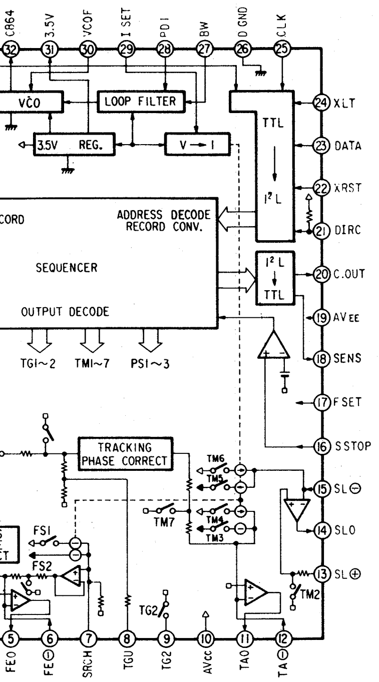

LPF I (R)
LPF O (R)
DEENP I (R)
DEENP O (R)
DE SW (R)
LINE MUTE (R)
DEENP CONT
HPAMP I (R)
RIPPLE
HPAMP O (R)
HP MUTE (R)
GND
LPF I (L)
LPF O (L)
DEENP I (L)
DEENP O (L)
DE SW (L)
LINE MUTE (L)
MUTE CONT
HPAMP I (L)
BIAS OUT
HPAMP O (L)
HP MUTE (L)
VCC
SW CONTROL
SW CONTROL

IC501
CXA1271Q

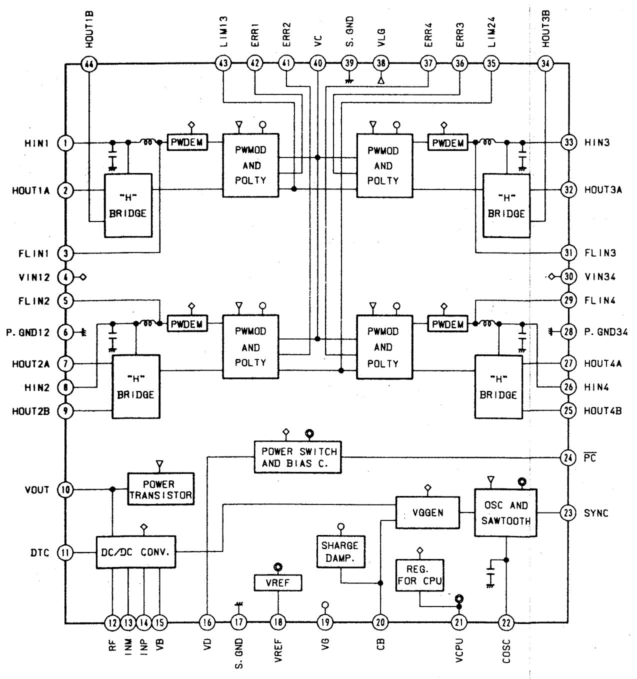

EO
E
F
VC
PD2
PD1
PD
LD
E I-V AMP
F I-V AMP
RF I-V AMP(2)
RF I-V AMP(1)
APC LD AMP
APC PD AMP
TRACK ERROR AMP
RF SUMMING AMP
CENTER VOLT B
FOK AMP
FOK COMPA-RATOR
CURRENT REF
VOLT REF
LEVEL SHIFT
DEFECT AMP
DEFECT BOTTOM HOLD
MIRROR DEFFER AMP
PEAK & BOTTOM HOLD
MIRROR AMP
FOCUS ERROR AMP
AUTO ASY C-AMP
DEFECT COMPA-RATOR
MIRROR COMPA-RATOR
MIRROR HOLD AMP
AUTO ASY BUFFER
EFM COMPA-RATOR
EI
VR
TEST
CC2
CC1
VEE
FE BAIS
FE
P/N
RF ⊖
RFO
RFI
(NC)
Vcc
LD ON
FOK
TE
DEFECT
MIRR
CP
CB
DGND
ASY
EFM

IC601
CXD1135Q


LRCK
WDCK
DAI6
DAI5
DAI4
DAI3
DAI2
VDD
DAI1
DAI0
DA09
DA08
DA07
DA06
DA05
DA04
FSW
MON
MDP
MDS
EFM
ASY
LOCK
VCOO
VCOI
TEST
PDO
Vss
CLK
XLT
DATA
XRST
CNIN
SENS
MUTG
CRCF
EXCK
SBSO
SUBQ
SCOR
DA03
DA02
DA01
APTL
APTR
PSSL
SLOB
MD3
MD2
MD1
XTAO
XTAI
Vss
C4M
RACS
RAWA
RAI1
RAI0
RA09
RA08
RA07
RA06
RA05
RA04
SQCK
SQEX
DOTY
GFS
DB01
DB02
DB03
DB04
VDD
DB05
DB06
DB07
DB08
RA01
RA02
RA03
CLV SERVO CONTROL
SELECTOR
FRAME SYNC DETECTOR/ PROTECTOR/ INSERTER
VCO CIRCUIT TIMING GENERATOR
EFM-PLL
23-BIT SHIFT REGISTER
SUBCODE SYNC DETECTOR
CPU INTERFACE
TRACKING COUNTER
X'TAL CIRCUIT TIMING GENERATOR
DIGITAL FILTER
RAM ADDRESS GENERATOR
DIGITAL OUT
SUB CODE Q REGISTER
SUB CODE DEMODULATOR
EFM DEMODULATOR
ERROR DETECTOR/ CORRECTOR
INTERPOLATOR


CR64
3.5V
VCOF
I SET
PDI
BW
D GND
CLK
VCO
LOOP FILTER
3.5V REG.
V→I
TTL
I²L
XLT
DATA
XRST
DIRC
C.OUT
AVEE
SENS
F SET
S STOP
SL⊖
SLO
SL⊕
CORD
ADDRESS DECODE RECORD CONV.
SEQUENCER
OUTPUT DECODE
TGI~2
TMI~7
PSI~3
TRACKING PHASE CORRECT
TM6
TM5
TM4
TM3
TM7
TM2
FS1
FS2
TG2
FEO
FE⊖
SRCH
TGU
TG2
AVcc
TAO
TA⊖

IC504
MPC1715


HOUT1B
LIM13
ERR1
ERR2
VC
S.GND
VLG
ERR4
ERR3
LIM24
HOUT3B
HIN1
HOUT1A
FLIN1
VIN12
FLIN2
P.GND12
HOUT2A
HIN2
HOUT2B
VOUT
DTC
HIN3
HOUT3A
FLIN3
VIN34
FLIN4
P.GND34
HOUT4A
HIN4
HOUT4B
PC
SYNC
PWDEM
PWMOD AND POLTY
"H" BRIDGE
POWER SWITCH AND BIAS C.
POWER TRANSISTOR
VQGEN
OSC AND SAWTOOTH
DC/DC CONV.
SHARGE DAMP.
VREF
REG. FOR CPU
RF
INM
INP
VB
VD
S.GND
VREF
VB
CB
VCPU
COSC

SECTION 3

EXPLODED VIEWS AND PARTS LIST

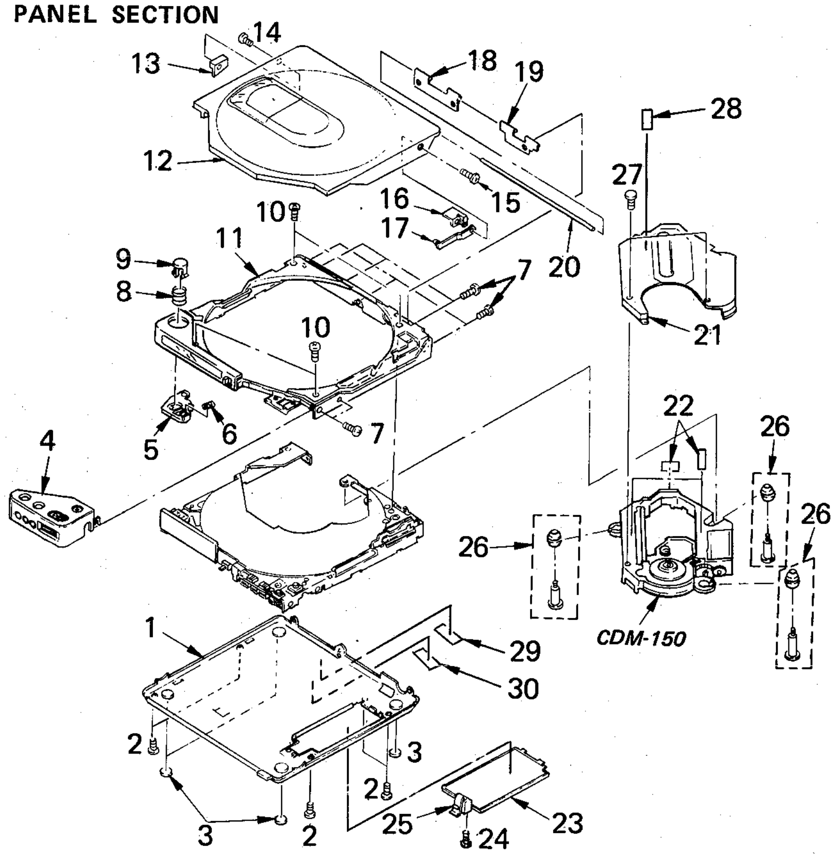
NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ Cabinet's Color ↑ Parts' Color

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

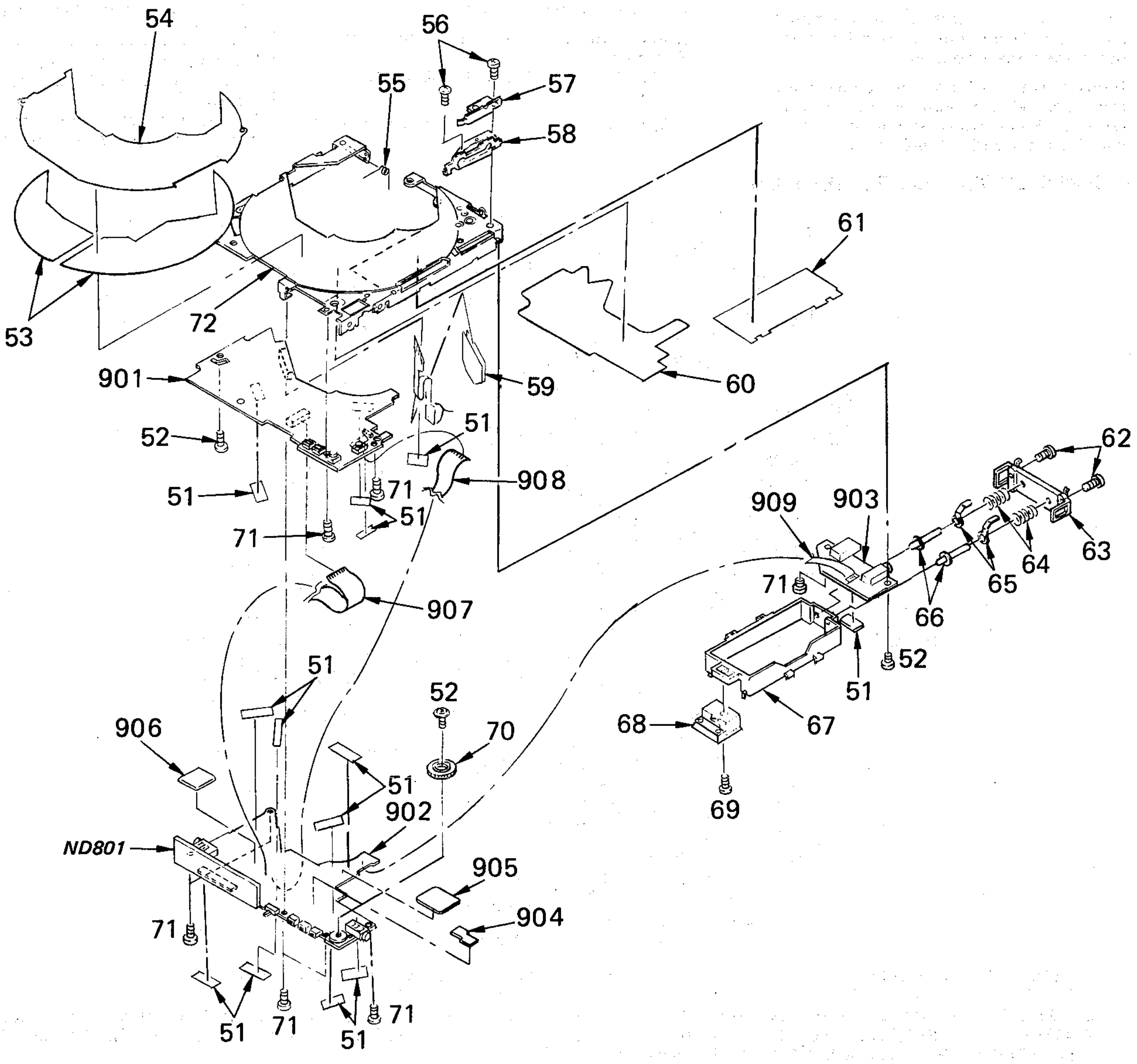
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifé.

(1) UPPER/LOWER PANEL SECTION



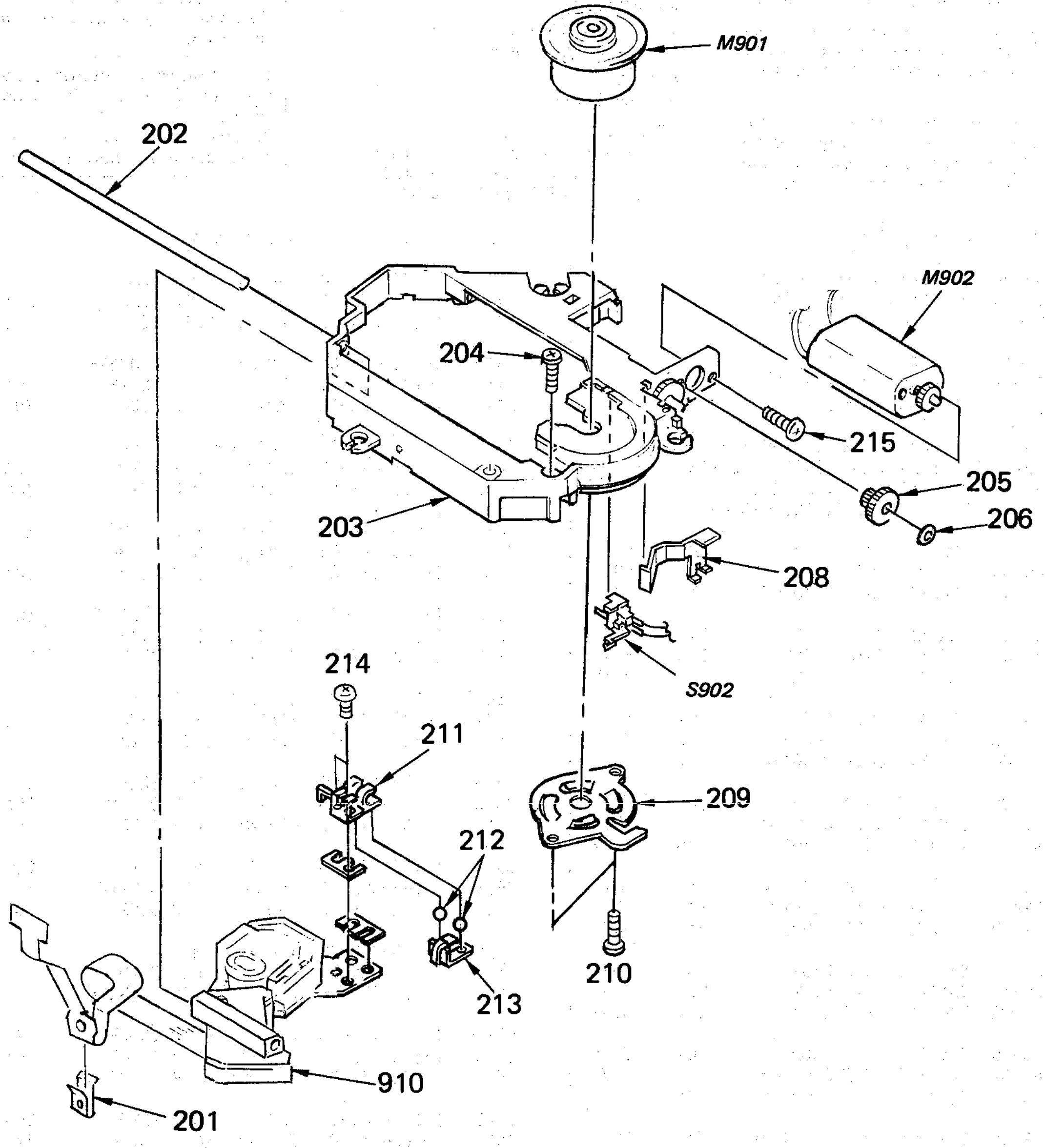
No.	Part No.	Description	Remarks
1	X-4921-213-1	(BLACK)...PANEL ASSY, BOTTOM	3
	X-4921-214-1	(WHITE)...PANEL ASSY, BOTTOM	3
2	7-627-551-28	(WHITE)...SCREW (M1.4X2.5), SPECIAL HEAD	
	3-703-816-42	(BLACK)...SCREW (M1.4X2.5), SPECIAL HEAD	
3	4-912-641-01	FOOT, RUBBER	
4	X-4921-211-1	(BLACK)...ORNAMENT ASSY, BUTTON	
	X-4921-212-1	(WHITE)...ORNAMENT ASSY, BUTTON	
5	4-924-131-01	LEVER, LOCK	
6	4-924-140-01	SPRING, COMPRESSION	
7	3-703-816-71	(WHITE)...SCREW (M1.4X3.0), SPECIAL HEAD	
	3-703-816-72	(BLACK)...SCREW (M1.4X3.0), SPECIAL HEAD	
8	4-917-727-01	SPRING, COMPRESSION	
9	4-924-130-01	(BLACK)...BUTTON, OPEN	
	4-924-130-11	(WHITE)...BUTTON, OPEN	
10	3-703-816-21	(BLACK)...SCREW (M1.4X5.0), SPECIAL HEAD	
	3-703-816-22	(WHITE)...SCREW (M1.4X5.0), SPECIAL HEAD	
11	X-4921-217-1	(BLACK)...CABINET ASSY	
	X-4921-218-1	(WHITE)...CABINET ASSY	
12	X-4921-219-1	(BLACK)...PANEL ASSY, UPPER	
	X-4921-220-1	(WHITE)...PANEL ASSY, UPPER	
13	4-920-272-01	RETAINER, SPRING, SWITCHING	
14	3-895-823-41	(BLACK)...SCREW (B1.4X4), TAPPING	
	3-895-823-51	(WHITE)...SCREW (B1.4X4), TAPPING	
15	3-703-816-01	(WHITE)...SCREW (M1.4X2.0), SPECIAL HEAD	
	3-703-816-02	(BLACK)...SCREW (M1.4X2.0), SPECIAL HEAD	
16	X-4917-704-1	BRACKET ASSY, SWITCHING PLATE	
17	X-4921-216-1	PLATE (B) ASSY, SWITCHING	
18	4-924-142-01	(BLACK)...HINGE (LEFT)	
	4-924-142-11	(WHITE)...HINGE (LEFT)	
19	4-924-143-01	(BLACK)...HINGE (RIGHT)	
	4-924-143-11	(WHITE)...HINGE (RIGHT)	
20	4-924-144-01	SHAFT, FULCRUM	
21	4-924-129-01	COVER, MD	
22	3-831-441-XX	CUSHION	
23	4-924-164-01	(BLACK)...LID, BATTERY CASE	
	4-924-164-11	(WHITE)...LID, BATTERY CASE	
24	3-318-203-71	(WHITE)...SCREW (B1.7X5), TAPPING	
	3-318-203-72	(BLACK)...SCREW (B1.7X5), TAPPING	
25	4-924-165-01	(BLACK)...CHIP, LOCK, BATTERY CASE LID	
	4-924-165-11	(WHITE)...CHIP, LOCK, BATTERY CASE LID	
26	X-4917-723-1	INSULATOR ASSY	
27	3-895-823-11	SCREW (B1.4X3), TAPPING	
28	4-908-711-01	LABEL, CAUTION, LENS	
29	*4-924-124-01	(US,Canadian)......LABEL, MODEL NUMBER	
	*4-924-172-01	(AEP,UK,E:BLACK,Austrarian,Saudi Arabia) ...LABEL, MODEL NUMBER	
	*4-924-172-11	(AEP,UK,E:WHITE)...LABEL, MODEL NUMBER	
30	*4-885-838-01	(AEP,UK)...LABEL, CLASS 1	

(2) GENERAL SECTION



No.	Part No.	Description	Remarks
51	3-831-441-XX	CUSHION (E)	
52	3-335-797-21	SCREW (M1.4X3), TOOTHED LOCK	
53	4-924-139-01	SHEET, ADHESIVE, CHASSIS COVER	
54	4-924-138-01	COVER, CHASSIS	
55	4-917-745-01	SPRING	
57	*4-917-753-01	SPRING	
58	4-917-751-01	PLATE, SLIDE, SWITCHING PLATE	
59	*4-924-183-01	PAPER (B), SHIELD, PAL FLEXIBLE	
60	*4-924-141-01	SHEET, INSULATING, PC BOARD	
61	*4-924-145-01	SHEET, CASE (LOWER)	
62	3-318-203-62	SCREW (B1.7X4), TAPPING	
63	4-924-134-01	CHIP, HOLDING, TERMINAL	
64	4-924-136-01	SPRING, COMPRESSION	
65	4-924-137-01	PLATE, CONNECTION	
66	4-924-135-01	PIN, TERMINAL	
67	4-924-169-01	CASE, BATTERY	
68	4-924-133-01	(BLACK)...CHIP, FIXED, BOTTOM PANEL	
	4-924-133-11	(WHITE)...CHIP, FIXED, BOTTOM PANEL	
69	3-703-816-42	(BLACK)...SCREW (M1.4X2.5), SPECIAL HEAD	
	7-627-551-28	(WHITE)...SCREW (M1.4X2.5), SPECIAL HEAD	
70	4-924-155-01	(BLACK)...KNOB, VOLUME	
	4-924-155-11	(WHITE)...KNOB, VOLUME	
72	*X-4921-210-1	CHASSIS ASSY, MAIN	
901	A-3015-603-A	PC BOARD ASSY, SERVO	
902	A-3015-604-A	PC BOARD ASSY, MAIN	
903	A-3015-605-A	PC BOARD ASSY, JACK	
904	*1-626-173-11	PC BOARD, MUTE	
905	*1-626-094-11	PC BOARD, SWITCH	
906	*1-625-482-11	PC BOARD, GM-2	
907	1-625-584-11	PC BOARD, CONNECTION FLEXIBLE	
908	1-625-585-11	PC BOARD, KEY SWITCH FLEXIBLE	
909	1-625-586-11	PC BOARD, JACK FLEXIBLE	
ND801	1-808-290-11	LCD MODULE	

(3) MECHANISM SECTION (CDM-150)



No.	Part No.	Description	Remarks
201	4-917-622-01	RETAINER, FLEXIBLE	
202	4-917-611-01	SHAFT (A)	
203	X-4921-225-1	CHASSIS ASSY, MD	
204	4-921-299-01	SCREW (1.7X8), SPECIAL	
205	4-921-292-01	GEAR (B)	
206	3-315-384-11	WASHER, STOPPER	
208	4-921-290-01	SPRING	
209	4-921-287-01	BRACKET, MOTOR	
210	4-912-432-01	SCREW (B1.4X5), TAPPING	
211	4-921-294-01	RACK (A)	
212	7-671-111-11	STEEL, BOUL 1.5MM	
213	4-921-296-01	SPRING	
214	7-627-552-38	SCREW, PRECISION +P 1.7X3	
215	7-627-553-38	SCREW, PRECISION +P 2X3	
910	⚠.8-848-096-11	DEVECE, OPTICS (KSS-165A)	
M901	A-3133-335-A	MOTOR ASSY, CLV	
M902	A-3133-334-A	MOTOR SUB ASSY, FEED	
S902	1-571-099-11	SWITCH	

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 4
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA...,
UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref.No.	Part No.	Description		
901	A-3015-603-A	PC BOARD ASSY, SERVO		
902	A-3015-604-A	PC BOARD ASSY, MAIN		
903	A-3015-605-A	PC BOARD ASSY, JACK		
904	*1-626-173-11	PC BOARD, MUTE		
905	*1-626-094-11	PC BOARD, SWITCH		
906	*1-625-482-11	PC BOARD, GM-2		
907	1-625-584-11	PC BOARD, CONNECTION FLEXIBLE		
908	1-625-585-11	PC BOARD, KEY SWITCH FLEXIBLE		
909	1-625-586-11	PC BOARD, JACK FLEXIBLE		
910	⚠.8-848-096-11	DEVECE, OPTICS (KSS-165A)		
C102	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V
C103	1-163-209-00	CERAMIC CHIP 0.0015MF	5%	50V
C104	1-163-212-00	CERAMIC CHIP 0.002MF	5%	50V
C105	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C106	1-163-129-00	CERAMIC CHIP 330PF	10%	50V
C107	1-135-130-11	TANTAL. CHIP 4.7MF	20%	6.3V
C108	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V
C109	1-124-225-00	ELECT 100MF	20%	6.3V
C110	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C111	1-163-125-00	CERAMIC CHIP 220PF	10%	50V
C113	1-163-209-00	CERAMIC CHIP 0.0015MF	5%	50V
C202	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V
C203	1-163-209-00	CERAMIC CHIP 0.0015MF	5%	50V
C204	1-163-212-00	CERAMIC CHIP 0.002MF	5%	50V
C205	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C206	1-163-129-00	CERAMIC CHIP 330PF	10%	50V
C207	1-135-130-11	TANTAL. CHIP 4.7MF	20%	6.3V
C208	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V
C209	1-124-225-00	ELECT 100MF	20%	6.3V
C210	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C211	1-163-125-00	CERAMIC CHIP 220PF	10%	50V
C213	1-163-209-00	CERAMIC CHIP 0.0015MF	5%	50V
C301	1-135-101-21	TANTAL. CHIP 22MF	20%	6.3V
C302	1-135-101-21	TANTAL. CHIP 22MF	20%	6.3V
C303	1-135-174-11	TANTAL. CHIP 10MF	20%	10V
C304	1-131-381-00	TANTALUM 47MF	20%	10V
C305	1-135-105-00	TANTAL. CHIP 33MF	20%	4V
C306	1-135-101-21	TANTAL. CHIP 22MF	20%	6.3V
C307	1-135-101-21	TANTAL. CHIP 22MF	20%	6.3V
C308	1-135-101-21	TANTAL. CHIP 22MF	20%	6.3V
C401	1-124-225-00	ELECT 100MF	20%	6.3V
C402	1-135-103-00	TANTAL. CHIP 3.3MF	20%	4V
C403	1-135-091-00	TANTAL. CHIP 1MF	20%	16V
C404	1-135-174-11	TANTAL. CHIP 10MF	20%	10V
C405	1-135-130-11	TANTAL. CHIP 4.7MF	20%	6.3V
C406	1-135-103-00	TANTAL. CHIP 3.3MF	20%	4V
C407	1-135-105-00	TANTAL. CHIP 33MF	20%	4V
C408	1-135-174-11	TANTAL. CHIP 10MF	20%	10V
C409	1-135-093-00	TANTAL. CHIP 10MF	20%	16V
C410	1-101-005-00	CERAMIC 0.022MF		50V
C411	1-126-357-11	ELECT 150MF	20%	16V
C412	1-135-103-00	TANTAL. CHIP 3.3MF	20%	4V
C413	1-131-365-00	TANTALUM 10MF		16V
C414	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V
C415	1-135-174-11	TANTAL. CHIP 10MF	20%	10V
C416	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V
C501	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C502	1-163-034-00	CERAMIC CHIP 0.033MF	10%	25V
C503	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C504	1-135-083-00	TANTAL. CHIP 0.47MF	20%	25V
C505	1-163-127-00	CERAMIC CHIP 270PF	10%	50V
C506	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C507	1-135-105-00	TANTAL. CHIP 33MF	20%	4V
C508	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C509	1-135-104-00	TANTAL. CHIP 22MF	20%	4V
C510	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C511	1-163-095-00	CERAMIC CHIP 12PF	5%	50V
C512	1-135-105-00	TANTAL. CHIP 33MF	20%	4V
C513	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C514	1-135-105-00	TANTAL. CHIP 33MF	20%	4V
C515	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C517	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C518	1-163-033-00	CERAMIC CHIP 0.022MF	10%	25V
C519	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C520	1-135-130-11	TANTAL. CHIP 4.7MF	20%	6.3V
C521	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C522	1-135-104-00	TANTAL. CHIP 22MF	20%	4V
C523	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C524	1-135-104-00	TANTAL. CHIP 22MF	20%	4V
C525	1-135-130-11	TANTAL. CHIP 4.7MF	20%	6.3V
C526	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C527	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C528	1-135-105-00	TANTAL. CHIP 33MF	20%	4V
C529	1-163-035-00	CERAMIC CHIP 0.047MF	10%	25V
C530	1-163-023-00	CERAMIC CHIP 0.015MF	10%	50V
C531	1-135-104-00	TANTAL. CHIP 22MF	20%	4V
C532	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C533	1-163-034-00	CERAMIC CHIP 0.033MF	10%	25V
C534	1-162-637-11	CERAMIC CHIP 0.47MF		16V
C535	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C536	1-163-038-00	CERAMIC CHIP 0.1MF		25V

Ref.No.	Part No.	Description		
C537	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C538	1-135-104-00	TANTAL. CHIP 10MF	20%	4V
C539	1-135-104-00	TANTAL. CHIP 10MF	20%	4V
C540	1-102-973-00	CERAMIC 100PF	5%	50V
C541	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C542	1-163-035-00	CERAMIC CHIP 0.047MF	10%	25V
C543	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C545	1-131-381-00	TANTALUM 47MF	20%	10V
C546	1-135-091-11	TANTAL. CHIP 1MF	20%	16V
C547	1-135-091-11	TANTAL. CHIP 1MF	20%	16V
C548	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C549	1-163-986-00	CERAMIC CHIP 0.027MF	10%	25V
C550	1-162-638-11	CERAMIC CHIP 1MF		16V
C551	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C552	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C553	1-162-638-11	CERAMIC CHIP 1MF		16V
C554	1-162-638-11	CERAMIC CHIP 1MF		16V
C555	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C556	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C557	1-135-174-11	TANTAL. CHIP 10MF	20%	10V
C558	1-135-091-11	TANTAL. CHIP 1MF	20%	16V
C559	1-102-824-00	CERAMIC 470PF	5%	50V
C560	1-124-576-11	ELECT 220MF	20%	4V
C601	1-162-638-11	CERAMIC CHIP 1MF		16V
C602	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C603	1-163-101-00	CERAMIC CHIP 22PF	5%	50V
C604	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C605	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C606	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C607	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C801	1-135-104-00	TANTAL. CHIP 22MF	20%	4V
C802	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C803	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V
C804	1-135-099-00	TANTAL. CHIP 2.2MF	20%	6.3V
C805	1-163-113-00	CERAMIC CHIP 68PF	5%	50V
C806	1-163-113-00	CERAMIC CHIP 68PF	5%	50V
C808	1-162-638-11	CERAMIC CHIP 1MF		16V
C809	1-163-021-00	CERAMIC CHIP 0.01MF	10%	50V
C810	1-163-141-00	CERAMIC CHIP 0.001MF	10%	50V
C811	1-135-105-00	TANTAL. CHIP 33MF	20%	4V
C813	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C814	1-135-103-00	TANTAL. CHIP 3.3MF	20%	4V
C815	1-162-637-11	CERAMIC CHIP 0.47MF		16V
C816	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C817	1-163-038-00	CERAMIC CHIP 0.1MF		25V
CN401	1-535-608-21	TERMINAL, BATTERY		
CN501	1-563-546-11	HOUSING, CONNECTOR 12P		
D401	8-719-938-78	DIODE SB10-05PCP		
D403	8-719-100-05	DIODE 1S2837		
D405	8-719-938-75	DIODE SB05-05CP		
D406	8-719-100-05	DIODE 1S2837		
D407	8-719-105-64	DIODE RD4.3M-B2		
D408	8-719-101-23	DIODE 1SS123		
D409	8-719-938-78	DIODE SB10-05PCP		
D410	8-719-101-23	DIODE 1SS123		
D411	8-719-100-05	DIODE 1S2837		

Ref.No.	Part No.	Description			
D412	8-719-100-05	DIODE 1S2837			
D413	8-719-938-78	DIODE SB10-05PCP			
D414	8-719-100-05	DIODE 1S2837			
D415	8-719-100-05	DIODE 1S2837			
D485	8-719-105-73	DIODE RD4.7M-B1			
D501	8-719-938-72	DIODE SB01-05CP			
D502	8-719-938-72	DIODE SB01-05CP			
D503	8-719-938-72	DIODE SB01-05CP			
D504	8-719-938-72	DIODE SB01-05CP			
D505	8-719-911-19	DIODE 1SS119			
D801	8-719-100-05	DIODE 1S2837			
D802	8-719-100-05	DIODE 1S2837			
D803	8-719-100-05	DIODE 1S2837			
D804	8-719-100-05	DIODE 1S2837			
D805	8-719-938-72	DIODE SB01-05CP			
D806	8-719-938-72	DIODE SB01-05CP			
D807	8-719-100-05	DIODE 1S2837			
D808	8-719-938-72	DIODE SB01-05CP			
D809	8-719-100-05	DIODE 1S2837			
D810	8-719-105-91	DIODE RD5.6M-B2			
D811	8-719-101-23	DIODE 1SS123			
D813	8-719-100-03	DIODE 1S2835			
D814	8-719-100-05	DIODE 1S2837			
D816	8-719-970-10	DIODE SLM-125YW			
D817	8-719-970-10	DIODE SLM-125YW			
D818	8-719-970-10	DIODE SLM-125YW			
D819	8-719-970-10	DIODE SLM-125YW			
D820	8-719-970-10	DIODE SLM-125YW			
D821	8-719-970-10	DIODE SLM-125YW			
D822	8-719-106-71	DIODE RD12M-B2			
D823	8-719-106-71	DIODE RD12M-B2			
D824	8-719-911-19	DIODE 1SS119			
D825	8-719-100-05	DIODE 1S2837			
IC301	8-759-971-58	IC PCM60P			
IC302	8-759-630-75	IC M51568FP			
IC501	8-752-033-55	IC CXA1271Q			
IC502	8-752-033-54	IC CXA1272Q-Z			
IC503	8-759-100-94	IC UPC358G2			
IC504	8-759-030-17	IC MPC1715			
IC505	8-759-230-43	IC TC7S04F			
IC601	8-752-947-61	IC CXD1135Q			
IC602	8-752-320-44	IC CXK5816M-10L			
IC801	8-752-804-33	IC CXP5086-027Q			
IC802	8-759-700-90	IC NJM2901M			
J301	1-563-280-21	JACK (LINE OUT)			
J302	1-563-280-11	JACK (PHONES)			
J401	1-562-961-11	JACK (DC IN 9V)			
J801	1-563-280-31	JACK (REMOTE)			
JR301	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR401	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR501	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR502	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR801	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR802	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR803	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR804	1-216-296-00	METAL GLAZE	0	5%	1/8W

Ref.No.	Part No.	Description
L402	1-412-039-51	INDUCTOR CHIP 100UH
L403	1-412-037-21	INDUCTOR CHIP 47UH
L501	1-412-036-21	INDUCTOR CHIP 10UH (3C)
L502	1-412-039-51	INDUCTOR CHIP 100UH (4N)
L503	1-412-038-11	INDUCTOR 100UH (3C)
L504	1-412-039-51	INDUCTOR CHIP 100UH (4N)
L505	1-412-039-51	INDUCTOR CHIP 100UH (4N)
M901	A-3133-335-A	MOTOR ASSY, CLV
M902	A-3133-334-A	MOTOR SUB ASSY, FEED
ND801	1-808-290-11	LCD MODULE
Q101	8-729-159-64	TRANSISTOR 2SD596
Q201	8-729-159-64	TRANSISTOR 2SD596
Q301	8-729-159-64	TRANSISTOR 2SD596
Q401	8-729-162-43	TRANSISTOR 2SB624-BV3
Q402	8-729-100-66	TRANSISTOR 2SC1623
Q403	8-729-901-00	TRANSISTOR DTC124EK
Q405	8-729-102-75	TRANSISTOR 2SA812-M5
Q406	8-729-159-64	TRANSISTOR 2SD596
Q407	8-729-162-43	TRANSISTOR 2SB624-BV3
Q408	8-729-920-28	TRANSISTOR FMG9
Q409	8-729-101-07	TRANSISTOR 2SB798
Q410	8-729-901-03	TRANSISTOR DTC144WK
Q411	8-729-901-00	TRANSISTOR DTC124EK
Q412	8-729-207-55	TRANSISTOR RN1401
Q413	8-729-100-66	TRANSISTOR 2SC1623
Q414	8-729-901-05	TRANSISTOR DTA124EK
Q415	8-729-901-03	TRANSISTOR DTC144WK
Q416	8-729-901-00	TRANSISTOR DTC124EK
Q417	8-729-101-07	TRANSISTOR 2SB798
Q418	8-729-920-28	TRANSISTOR FMG9
Q419	8-729-901-00	TRANSISTOR DTC124EK
Q420	8-729-901-00	TRANSISTOR DTC124EK
Q421	8-729-901-05	TRANSISTOR DTA124EK
Q422	8-729-901-00	TRANSISTOR DTC124EK
Q423	8-729-116-06	TRANSISTOR 2SK160-K6
Q424	8-729-901-00	TRANSISTOR DTC124EK
Q425	8-729-102-75	TRANSISTOR 2SA812-M5
Q426	8-729-901-05	TRANSISTOR DTA124EK
Q427	8-729-102-75	TRANSISTOR 2SA812-M5
Q428	8-729-902-96	TRANSISTOR FMS1
Q429	8-729-920-28	TRANSISTOR FMG9
Q430	8-729-116-06	TRANSISTOR 2SK160-K6
Q431	8-729-101-07	TRANSISTOR 2SB798
Q432	8-729-901-00	TRANSISTOR DTC124EK
Q433	8-729-101-07	TRANSISTOR 2SB798
Q434	8-729-101-07	TRANSISTOR 2SB798
Q435	8-729-162-43	TRANSISTOR 2SB624-BV3
Q436	8-729-101-07	TRANSISTOR 2SB798
Q501	8-729-402-90	TRANSISTOR XN4609
Q502	8-729-162-44	TRANSISTOR 2SB624-BV4
Q503	8-729-271-22	TRANSISTOR 2SC2712G
Q504	8-729-271-22	TRANSISTOR 2SC2712G
Q801	8-729-901-00	TRANSISTOR DTC124EK
Q803	8-729-903-10	TRANSISTOR FMW1
Q804	8-729-901-05	TRANSISTOR DTA124EK
Q805	8-729-159-64	TRANSISTOR 2SD596
Q806	8-729-901-05	TRANSISTOR DTA124EK
Q807	8-729-907-39	TRANSISTOR IMD2

Ref.No.	Part No.	Description
Q808	8-729-901-06	TRANSISTOR DTA144EK
Q809	8-729-901-05	TRANSISTOR DTA124EK
Q810	8-729-159-64	TRANSISTOR 2SD596
R101	1-216-661-11	METAL CHIP 2.7K 0.50% 1/10W
R102	1-216-683-11	METAL CHIP 22K 0.50% 1/10W
R103	1-216-073-00	METAL GLAZE 10K 5% 1/10W
R104	1-216-683-11	METAL CHIP 22K 0.50% 1/10W
R105	1-216-697-11	METAL CHIP 82K 0.50% 1/10W
R106	1-216-699-11	METAL CHIP 100K 0.50% 1/10W
R107	1-216-087-00	METAL GLAZE 39K 5% 1/10W
R108	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W
R109	1-216-073-00	METAL GLAZE 10K 5% 1/10W
R110	1-216-009-00	METAL GLAZE 22 5% 1/10W
R111	1-216-073-00	METAL GLAZE 10K 5% 1/10W
R112	1-216-033-00	METAL GLAZE 220 5% 1/10W
R113	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W
R114	1-216-097-00	METAL GLAZE 100K 5% 1/10W
R201	1-216-661-11	METAL CHIP 2.7K 0.50% 1/10W
R202	1-216-683-11	METAL CHIP 22K 0.50% 1/10W
R203	1-216-073-00	METAL GLAZE 10K 5% 1/10W
R204	1-216-683-11	METAL CHIP 22K 0.50% 1/10W
R205	1-216-697-11	METAL CHIP 82K 0.50% 1/10W
R206	1-216-699-11	METAL CHIP 100K 0.50% 1/10W
R207	1-216-087-00	METAL GLAZE 39K 5% 1/10W
R208	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W
R209	1-216-073-00	METAL GLAZE 10K 5% 1/10W
R210	1-216-009-00	METAL GLAZE 22 5% 1/10W
R211	1-216-073-00	METAL GLAZE 10K 5% 1/10W
R212	1-216-033-00	METAL GLAZE 220 5% 1/10W
R213	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W
R214	1-216-097-00	METAL GLAZE 100K 5% 1/10W
R301	1-216-298-00	METAL GLAZE 2.2 5% 1/10W
R302	1-216-013-00	METAL GLAZE 33 5% 1/10W
R303	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W
R401	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W
R403	1-216-089-00	METAL GLAZE 47K 5% 1/10W
R404	1-216-129-00	METAL GLAZE 2.2M 5% 1/10W
R405	1-216-106-00	METAL GLAZE 240K 5% 1/10W
R406	1-216-081-00	METAL GLAZE 22K 5% 1/10W
R408	1-216-045-00	METAL GLAZE 680 5% 1/10W
R409	1-216-041-00	METAL GLAZE 470 5% 1/10W
R410	1-216-045-00	METAL GLAZE 680 5% 1/10W
R411	1-216-041-00	METAL GLAZE 470 5% 1/10W
R412	1-216-092-00	METAL GLAZE 62K 5% 1/10W
R413	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W
R414	1-216-081-00	METAL GLAZE 22K 5% 1/10W
R415	1-216-049-00	METAL GLAZE 1K 5% 1/10W
R416	1-216-033-00	METAL GLAZE 220 5% 1/10W
R417	1-216-056-00	METAL GLAZE 2K 5% 1/10W
R418	1-216-062-00	METAL GLAZE 3.6K 5% 1/10W
R419	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W
R420	1-216-095-00	METAL GLAZE 82K 5% 1/10W
R421	1-216-041-00	METAL GLAZE 470 5% 1/10W
R422	1-216-041-00	METAL GLAZE 470 5% 1/10W
R423	1-216-073-00	METAL GLAZE 10K 5% 1/10W
R426	1-216-129-00	METAL GLAZE 2.2M 5% 1/10W
R427	1-217-806-11	METAL GLAZE 1 5% 1/8W

Ref.No.	Part No.	Description			
R428	1-217-806-11	METAL GLAZE	1	5%	1/8W
R429	1-216-324-11	METAL GLAZE	10K	10%	1/10W
R430	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R431	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R432	1-216-683-11	METAL GLAZE	22K	0.5%	1/10W
R433	1-216-109-00	METAL GLAZE	330K	5%	1/10W
R435	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R436	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R437	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R438	1-216-041-00	METAL GLAZE	470	5%	1/10W
R439	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R440	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R441	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R442	1-216-017-00	METAL GLAZE	47	5%	1/10W
R443	1-216-047-00	METAL GLAZE	820	5%	1/10W
R444	1-216-324-11	METAL GLAZE	10K	1%	1/10W
R501	1-216-024-00	METAL GLAZE	91	5%	1/10W
R502	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R503	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R504	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R506	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R507	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R508	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R509	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R510	1-216-150-00	METAL GLAZE	10	5%	1/8W
R511	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R512	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R513	1-216-125-00	METAL GLAZE	1.5M	5%	1/10W
R514	1-216-109-00	METAL GLAZE	330K	5%	1/10W
R515	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R516	1-216-093-00	METAL GLAZE	68K	5%	1/10W
R517	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R518	1-216-129-00	METAL GLAZE	2.2M	5%	1/10W
R519	1-216-844-11	METAL GLAZE	82K	5%	1/16W
R520	1-216-844-11	METAL GLAZE	82K	5%	1/16W
R521	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R522	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R523	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R524	1-216-114-00	METAL GLAZE	510K	5%	1/10W
R525	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R526	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R527	1-216-687-11	METAL GLAZE	33K	0.5%	1/10W
R528	1-216-103-00	METAL GLAZE	180K	5%	1/10W
R529	1-216-062-00	METAL GLAZE	3.6K	5%	1/10W
R530	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W

Ref.No.	Part No.	Description			
R531	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R532	1-216-687-11	METAL GLAZE	33K	0.5%	1/10W
R533	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R534	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R536	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R538	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R539	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R540	1-216-833-91	METAL GLAZE	10K	5%	1/16W
R542	1-216-101-00	METAL GLAZE	150K	5%	1/10W
R543	1-216-101-00	METAL GLAZE	150K	5%	1/10W
R544	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R545	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R546	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R547	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R548	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R549	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R550	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R551	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W
R552	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W
R553	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R601	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R602	1-216-845-11	METAL GLAZE	100K	5%	1/16W
R603	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R801	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R802	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R803	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R804	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R805	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R806	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R807	1-216-109-00	METAL GLAZE	330K	5%	1/10W
R808	1-216-041-00	METAL GLAZE	470	5%	1/10W
R809	1-216-009-00	METAL GLAZE	22	5%	1/10W
R810	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R812	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R815	1-216-021-00	METAL GLAZE	68	5%	1/10W
R816	1-218-163-11	METAL GLAZE	120K	1%	1/10W
R817	1-216-694-11	METAL GLAZE	62K	0.5%	1/10W
R818	1-216-329-11	METAL GLAZE	5.1K	1%	1/10W
R819	1-216-654-11	METAL GLAZE	1.3K	0.5%	1/10W
R820	1-216-653-11	METAL GLAZE	1.2K	0.5%	1/10W
R821	1-216-689-11	METAL GLAZE	39K	0.5%	1/10W
R823	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R824	1-216-683-11	METAL GLAZE	22K	0.5%	1/10W
R825	1-216-021-00	METAL GLAZE	68	5%	1/10W
R826	1-216-073-00	METAL GLAZE	10K	5%	1/10W

Ref.No.	Part No.	Description
R829	1-216-121-00	METAL GLAZE 1M 5% 1/10W
R831	1-216-097-00	METAL GLAZE 100K 5% 1/10W
R832	1-216-105-00	METAL GLAZE 220K 5% 1/10W
R833	1-216-073-00	METAL GLAZE 10K 5% 1/10W
R834	1-216-049-00	METAL GLAZE 1K 5% 1/10W
R835	1-216-049-00	METAL GLAZE 1K 5% 1/10W
R836	1-216-089-00	METAL GLAZE 47K 5% 1/10W
R837	1-216-121-00	METAL GLAZE 1M 5% 1/10W
R838	1-216-097-00	METAL GLAZE 100K 5% 1/10W
RV301	1-237-092-11	RES, VAR, CARBON 10K/10K (VOLUME)
RV401	1-237-325-11	RES, ADJ, METAL GLAZE 4.7K
RV501	1-237-088-21	RES, ADJ, METAL GLAZE 4.7K
RV502	1-237-090-11	RES, ADJ, METAL GLAZE 22K
RV503	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV504	1-237-575-11	RES, ADJ, METAL GLAZE 1.0K
RV505	1-230-873-11	RES, ADJ, METAL GLAZE 47K
RV801	1-237-325-11	RES, ADJ, METAL GLAZE 4.7K
S801	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)(■)
S802	1-570-909-21	SWITCH, TACTIL (REFLOW TYPE)(▶❚❚)
S803	1-570-204-11	SWITCH, KEY BOARD (PLAY MODE)
S804	1-570-204-11	SWITCH, KEY BOARD (REMAIN/ENTER)
S805	1-570-204-11	SWITCH, KEY BOARD (KEY MODE)
S806	1-570-204-11	SWITCH, KEY BOARD (▶▶❙)
S807	1-570-204-11	SWITCH, KEY BOARD (❙◀◀)
S808	1-570-397-21	SWITCH, SLIDE (HOLD)
S901	1-554-911-11	SWITCH, LEAF
S902	1-571-099-11	SWITCH
X601	1-567-737-11	VIBRATOR, CRYSTAL (16.9344MHz)
X801	1-577-064-21	VIBRATOR, CHIP CERAMIC (3.58MHz)

ACCESSORY & PACKING MATERIAL

Part No.	Description
⚠.1-463-364-41	(Saudi Arabia)...ADAPTOR, AC (AC-190A)
⚠.1-463-691-11	(US).............ADAPTOR, AC (AC-930A)
⚠.1-463-694-11	(Canadian).......ADAPTOR, AC (AC-930A)
⚠.1-463-700-11	(UK).............ADAPTOR, AC (AC-930A)
⚠.1-463-701-11	(Austrarian).....ADAPTOR, AC (AC-930A)
⚠.1-463-702-11	(E)..............ADAPTOR, AC (AC-930W)
⚠.1-463-705-11	(AEP)...........ADAPTOR, AC (AC-930AEP)
⚠.1-506-401-00	(Saudi Arabia)...ADAPTOR, CONVERSION
⚠.1-526-565-00	(E)...AC PLUG ADAPTOR
1-555-658-21	CORD, CONNECTION
3-769-829-11	(AEP,UK,E,Austrarian,Saudi Arabia) ...MANUAL, INSTRUCTION
3-769-829-21	(US,Canadian)...MANUAL, INSTRUCTION
3-769-829-31	(Canadian)......MANUAL, INSTRUCTION
3-769-829-41	(AEP)...........MANUAL, INSTRUCTION
4-924-113-01	(US).........INDIVIDUAL CARTON
*4-924-114-01	(Canadian)...INDIVIDUAL CARTON
*4-924-118-01	(AEP,E,Austrarian,Saudi Arabia) ...INDIVIDUAL CARTON
*4-924-119-01	(UK).........INDIVIDUAL CARTON
4-907-095-02	SHEET, PROTECTION
4-924-121-01	CASE, ACCESSORY
4-924-122-01	CUSHION (LEFT RIGHT)
4-924-125-01	CASE, CARRYING
4-924-126-01	BELT, CARRYING
8-952-266-94	(UK)...HEADPHONE MDR-A10L/B SET

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note:** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

9-953-085-11

Sony Corporation
Audio Group

English
88B0598-1
Printed in Japan
© 1988. 2
Published by A/V Engineering Service Dept.

D-15/150

SONY®

SERVICE MANUAL
SUPPLEMENT-1

File this supplement with the service manual.

US Model
Canadian Model
D-15
AEP Model
UK Model
E Model
Australian Model
D-150

Subject:	**1. Correction for the Service Manual** **2. Change of Main and Servo boards pattern**

1. Correct the service manual as mentioned below.

☛ : **changed portion**

<table>
<tr><th>Page</th><th>Incorrect</th><th>Correct</th></tr>
<tr><td>10</td><td>
8. Unplug the external power supply to stop spindle motor from rotating and remove the disc.
<table>
<tr><th>oscilloscope reading</th><th>adjustment</th></tr>
<tr><td>more than +50 mV</td><td>Not adjust again.</td></tr>
<tr><td>+50 mV ~ +20 mV</td><td>Adjust RV503 again for +50 mV reading on oscilloscope.</td></tr>
<tr><td>+20 mV ~ −20 mV</td><td>Adjust RV503 again for −20 mV reading on oscilloscope.</td></tr>
<tr><td>less than −20 mV</td><td>Not adjust again.</td></tr>
</table>
9. Remove the disc and connect the oscilloscope to main board IC502 ㊽ (FE).
10. Adjust RV503 again refering to the table followed.
11. After adjustment, release service mode (see page 6, 7).
</td><td>
8. Unplug the external power supply to stop spindle motor from rotating and remove the disc.
9. Remove the disc and connect the oscilloscope to main board IC502 ㊽ (FE).
10. Adjust RV503 again refering to the table followed.
☛
<table>
<tr><th>oscilloscope reading</th><th>adjustment</th></tr>
<tr><td>more than +50 mV</td><td>Not adjust again.</td></tr>
<tr><td>+50 mV ~ +20 mV</td><td>Adjust RV503 again for +50 mV reading on oscilloscope.</td></tr>
<tr><td>+20 mV ~ −20 mV</td><td>Adjust RV503 again for −20 mV reading on oscilloscope.</td></tr>
<tr><td>less than −20 mV</td><td>Not adjust again.</td></tr>
</table>
11. After adjustment, release service mode (see page 6, 7).
</td></tr>
<tr><td>16</td><td>
<table>
<tr><td>D501</td><td>G-22</td><td>Q413</td><td>C-7</td></tr>
<tr><td>D502</td><td>G-21</td><td>Q414</td><td>F-8</td></tr>
<tr><td>D503</td><td>G-21</td><td>Q415</td><td>G-6</td></tr>
<tr><td>D504</td><td>E-27</td><td>Q416</td><td>G-7</td></tr>
<tr><td>D505</td><td>I-25</td><td>Q417</td><td>F-5</td></tr>
<tr><td>D802</td><td>G-12</td><td>Q418</td><td>G-5</td></tr>
<tr><td>D803</td><td>H-10</td><td>Q419</td><td>F-7</td></tr>
<tr><td>D804</td><td>I-9</td><td>Q420</td><td>G-8</td></tr>
<tr><td>D805</td><td>I-13</td><td>Q421</td><td>G-7</td></tr>
<tr><td>D806</td><td>I-13</td><td>Q422</td><td>H-7</td></tr>
<tr><td>D807</td><td>I-13</td><td>Q423</td><td>F-6</td></tr>
<tr><td>D808</td><td>G-13</td><td>Q424</td><td>H-7</td></tr>
<tr><td>D809</td><td>E-12</td><td>Q425</td><td>G-6</td></tr>
<tr><td>D810</td><td>F-12</td><td>Q426</td><td>F-8</td></tr>
<tr><td>D811</td><td>H-14</td><td>Q427</td><td>F-8</td></tr>
<tr><td>D813</td><td>F-12</td><td>Q428</td><td>F-10</td></tr>
<tr><td>D814</td><td>D-13</td><td>Q429</td><td>F-9</td></tr>
<tr><td>D815</td><td>E-13</td><td>Q430</td><td>F-7</td></tr>
<tr><td>D816</td><td>J-10</td><td>Q431</td><td>E-2</td></tr>
<tr><td>D817</td><td>J-9</td><td>Q432</td><td>E-3</td></tr>
<tr><td>D818</td><td>J-9</td><td>Q433</td><td>B-9</td></tr>
</table>
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<tr><td></td><td>D501</td><td>G-22</td><td>Q413</td><td>C-7</td></tr>
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<tr><td>☛</td><td>D801</td><td>G-12</td><td></td><td></td></tr>
<tr><td></td><td>D802</td><td>G-12</td><td>Q418</td><td>G-5</td></tr>
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<tr><td></td><td>D805</td><td>I-13</td><td>Q421</td><td>G-7</td></tr>
<tr><td></td><td>D806</td><td>I-13</td><td>Q422</td><td>H-7</td></tr>
<tr><td></td><td>D807</td><td>I-13</td><td>Q423</td><td>F-6</td></tr>
<tr><td></td><td>D808</td><td>G-13</td><td>Q424</td><td>H-7</td></tr>
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<tr><td></td><td>D814</td><td>D-13</td><td>Q429</td><td>F-9</td></tr>
<tr><td>☛</td><td>~~D815~~</td><td>~~E-13~~</td><td>Q430</td><td>F-7</td></tr>
<tr><td></td><td>D816</td><td>J-10</td><td>Q431</td><td>E-2</td></tr>
<tr><td></td><td>D817</td><td>J-9</td><td>Q432</td><td>E-3</td></tr>
<tr><td></td><td>D818</td><td>J-9</td><td>Q433</td><td>B-9</td></tr>
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</table>

9-953-085-81

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Audio Group

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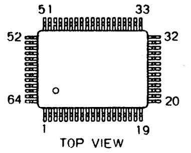
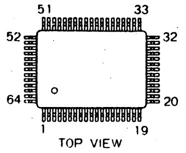
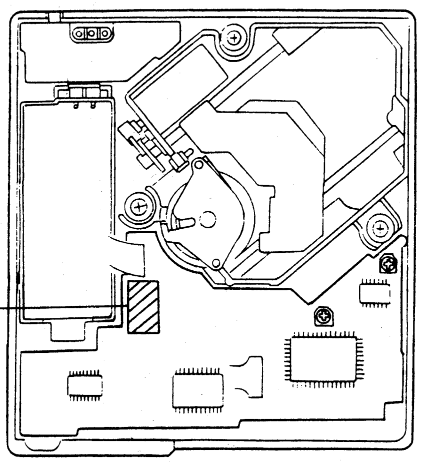
Published by A/V Engineering Service Dept.

Page	Incorrect	Correct
24	CXP5816-027Q  51 33 52 32 64 20 1 19 TOP VIEW	CXP5086-027Q  51 33 52 32 64 20 1 19 TOP VIEW
33	Ref.No. Part No. Description R428 1-217-806-11 METAL GLAZE 1 5% 1/8W R429 1-216-324-11 METAL GLAZE 10K 10% 1/10W R430 1-216-057-00 METAL GLAZE 2.2K 5% 1/10W R431 1-216-073-00 METAL GLAZE 10K 5% 1/10W R432 1-216-683-11 METAL GLAZE 22K 0.5% 1/10W R433 1-216-109-00 METAL GLAZE 330K 5% 1/10W R435 1-216-049-00 METAL GLAZE 1K 5% 1/10W R436 1-216-049-00 METAL GLAZE 1K 5% 1/10W R437 1-216-081-00 METAL GLAZE 22K 5% 1/10W	Ref.No. Part No. Description R428 1-217-806-11 METAL GLAZE 1 5% 1/8W R429 1-216-324-11 METAL GLAZE 10K 1% 1/10W R430 1-216-059-00 METAL GLAZE 2.7K 5% 1/10W R431 1-216-059-00 METAL GLAZE 2.7K 5% 1/10W R432 1-216-683-11 METAL GLAZE 22K 0.5% 1/10W R433 1-216-103-00 METAL GLAZE 180K 5% 1/10W R435 1-216-049-00 METAL GLAZE 1K 5% 1/10W R436 1-216-049-00 METAL GLAZE 1K 5% 1/10W R437 1-216-081-00 METAL GLAZE 22K 5% 1/10W

2. Pattern of main and servo boards has been changed.

– main board –

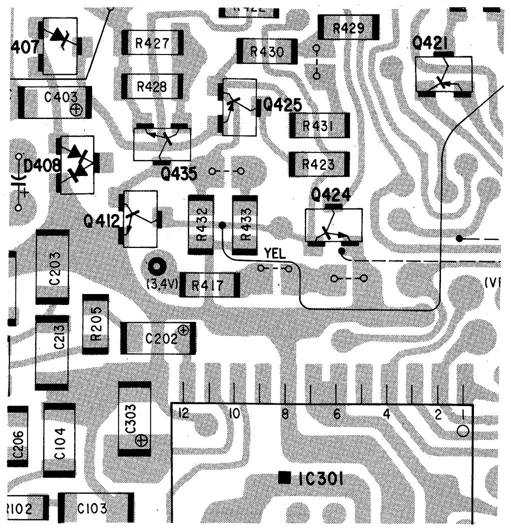
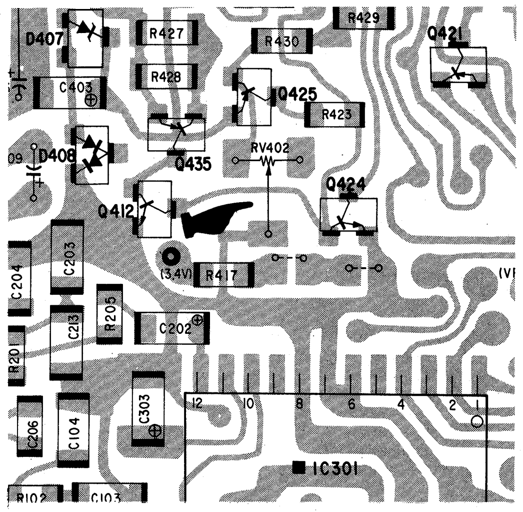
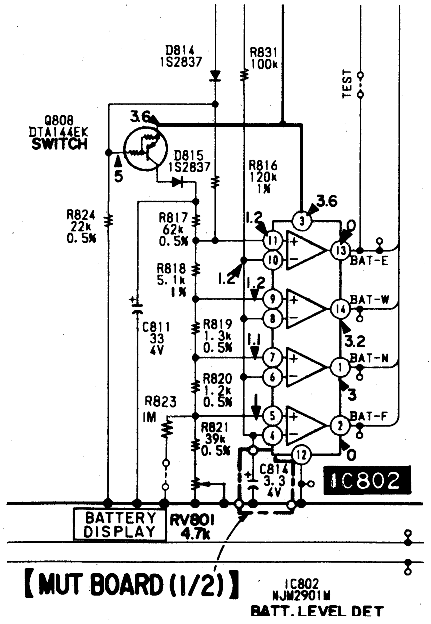
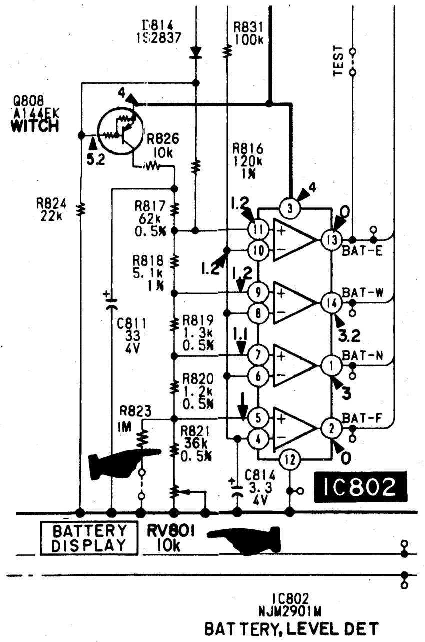


1-625-581-11 (Former)
1-625-581-12 (New)
1-625-581-13 (New)

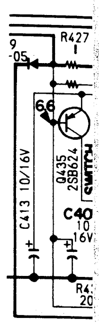
2-1. Difference between the board of part number suffix -12 and -11.

Board of part number suffix -12 is different from -11 as follows.
Rechargeable voltage has been adjusted by soldering bridge on -11 board.
On -12 board and following board RV402 is mounted for this adjustment.

: changed portion

Page	Board of parts number suffix -11	Board of part number suffix -12
18	 407 R427 R430 R429 Q421 C403 R428 Q425 R431 D408 Q435 R423 Q424 Q412 R432 R433 YEL C203 (3.4V) R417 C213 R205 C202 C206 C104 C303 12 10 8 6 4 2 IC301 R102 C103	 D407 R427 R430 R429 Q421 C403 R428 Q425 R423 D408 Q435 RV402 Q424 Q412 C204 C203 (3.4V) R417 C213 R205 C202 R201 C206 C104 C303 12 10 8 6 4 2 IC301 R102 C103
22	 D814 1S2837 R831 100k TEST Q808 DTA144EK SWITCH 3.6 5 D815 1S2837 R816 120k 1% R824 22k 0.5% R817 62k 0.5% R818 5.1k 1% C811 33 4V R819 1.3k 0.5% R820 1.2k 0.5% R823 1M R821 39k 0.5% C814 3.3 4V BAT-E BAT-W BAT-N BAT-F IC802 BATTERY DISPLAY RV801 4.7k 【MUT BOARD (1/2)】 IC802 NJM2901M BATT. LEVEL DET	 D814 1S2837 R831 100k TEST Q808 A144EK WITCH R826 10k 5.2 R816 120k 1% R824 22k R817 62k 0.5% R818 5.1k 1% C811 33 4V R819 1.3k 0.5% R820 1.2k 0.5% R823 1M R821 36k 0.5% C814 3.3 4V BAT-E BAT-W BAT-N BAT-F IC802 BATTERY DISPLAY RV801 10k IC802 NJM2901M BATTERY, LEVEL DET
		R821 1-216-688-11 METAL GLAZE CHIP 36K 0.5% 1/10W RV801 1-237-143-11 RES, ADJ, METAL GLAZE 10K

: change

Page
23 

R427
C413 10/16V
Q435 2SB624
C40
10
16V
R4
20

2-2. Difference b

Listed parts
MUT and G

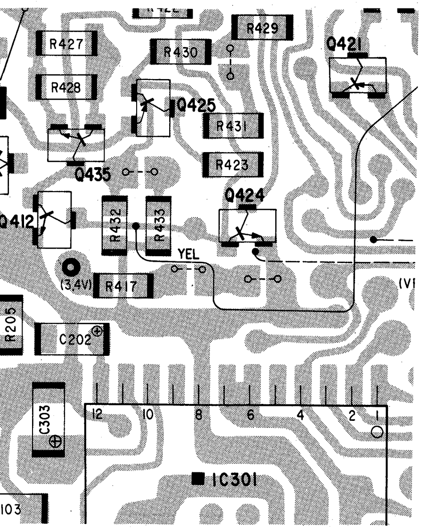
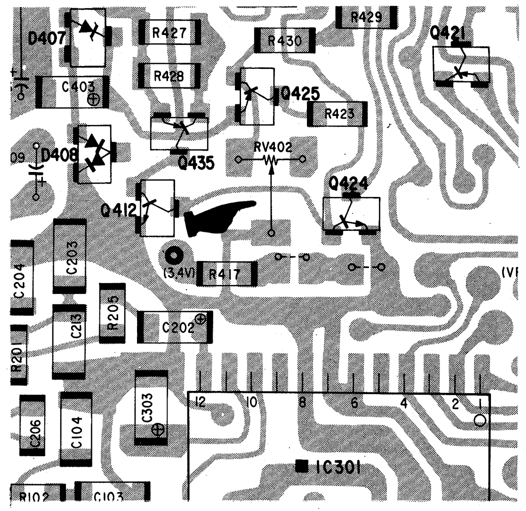
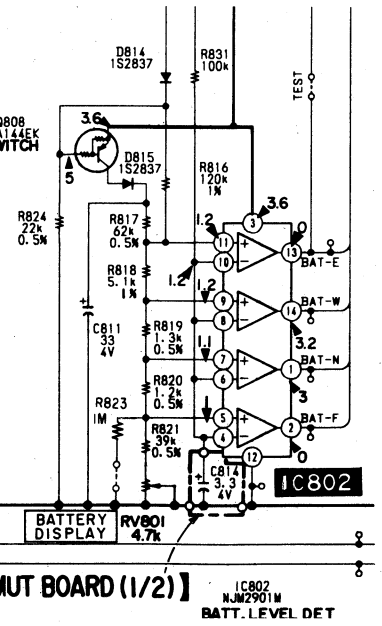
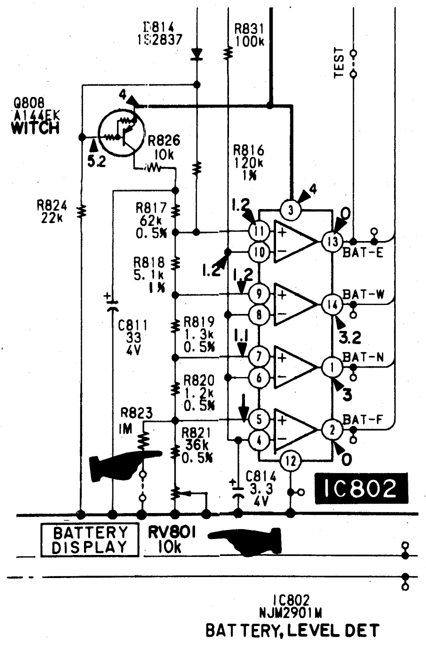
Part No.	
C410	CE
C540	CE
C559	CE
CN502	
D505	DI
D824	DI
JR501	ME
JR502	ME
JR503	
	MU
	GM

Refer to page 6 –

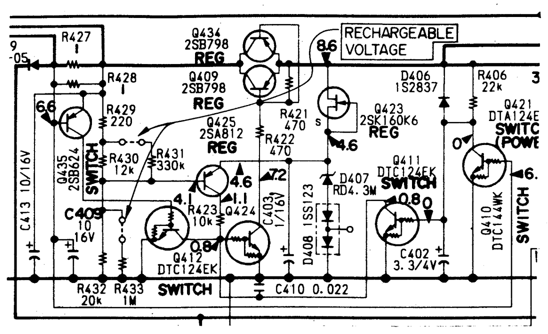
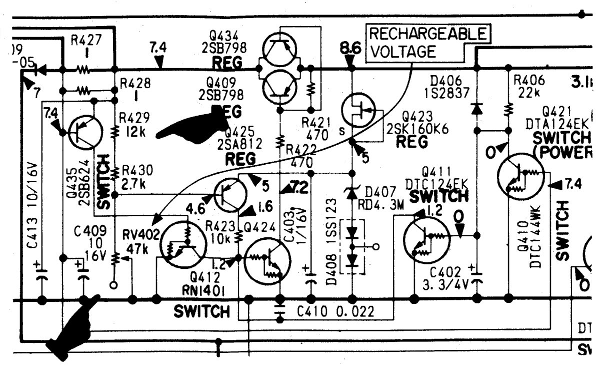
between the board of part number suffix -12 and -11.

rt number suffix -12 is different from -11 as follows.
le voltage has been adjusted by soldering bridge on -11 board.
rd and following board RV402 is mounted for this adjustment.

d portion

Board of parts number suffix -11	Board of part number suffix -12
	
	
	R821 1-216-688-11 METAL GLAZE CHIP 36K 0.5% 1/10W RV801 1-237-143-11 RES, ADJ, METAL GLAZE 10K

☛ : changed portion

Page	Board of part number suffix -11	Board of part number suffix -12
23		
		R429 1-216-075-00 METAL GLAZE CHIP 12K 5% 1/10W RV402 1-237-328-11 RES, ADJ, METAL GLAZE 47K

2-2. Difference between the board of part number suffix -13 and -12.

Listed parts on -13 and -12 boards are different.
MUT and GM-2 boards have been deleted when -13 board was used.

Part No.	Board of part number suffix -12	Board of part number suffix -13	Remarks
C410	CERAMIC 0.022MF 50V	1-163-037-11 CERAMIC CHIP 0.022MF 10% 25V	changed
C540	CERAMIC 100PF 5% 50V	1-163-117-00 CERAMIC CHIP 100PF 5% 50V	changed
C559	CERAMIC 470PF 5% 50V	1-163-133-00 CERAMIC CHIP 470PF 5% 50V	changed
CN502	————	1-563-552-11 CONNECTOR SOCKET 4P	added
D505	DIODE 1SS119	8-719-100-05 DIODE 1S2837	changed
D824	DIODE 1SS119	8-719-100-05 DIODE 1S2837	changed
JR501	METAL GLAZE CHIP 0 5% 1/10W	————	deleted
JR502	METAL GLAZE CHIP 0 5% 1/10W	————	deleted
JR503	————	1-216-295-06 METAL GLAZE CHIP 0 5% 1/10W	added
	MUT BOARD	————	deleted
	GM-2 BOARD	————	deleted

Refer to page 6 – 10 for -13 printed wiring boards and page 11 – 13 for -13 schematic diagram.

2-3. PRINTED WIRING BOARDS (Board of part number suffix -13)

Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- ▬ : B+ Line
- ▭ : adjustment for repair.
- Voltages and waveforms current are measured with top panel closed.
- Power voltage is dc 9 V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground in service mode.
  no mark : stop
  (   ): play
- Voltages are taken with a VOM (50 kΩ/V).
  Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
  Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : CD
- Switch

Ref. No.	Switch	Position
S801	■	OFF
S802	▶/❚❚	OFF
S803	PLAY MODE	OFF
S804	REMAIN/ENTER	OFF
S805	KEY MODE	OFF
S806	▶▶❚	OFF
S807	❚◀◀	OFF
S808	HOLD	ON
S901	LIMIT	OFF
S902	DOOR	ON

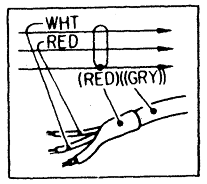
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Note on Printed Wirng Boards:

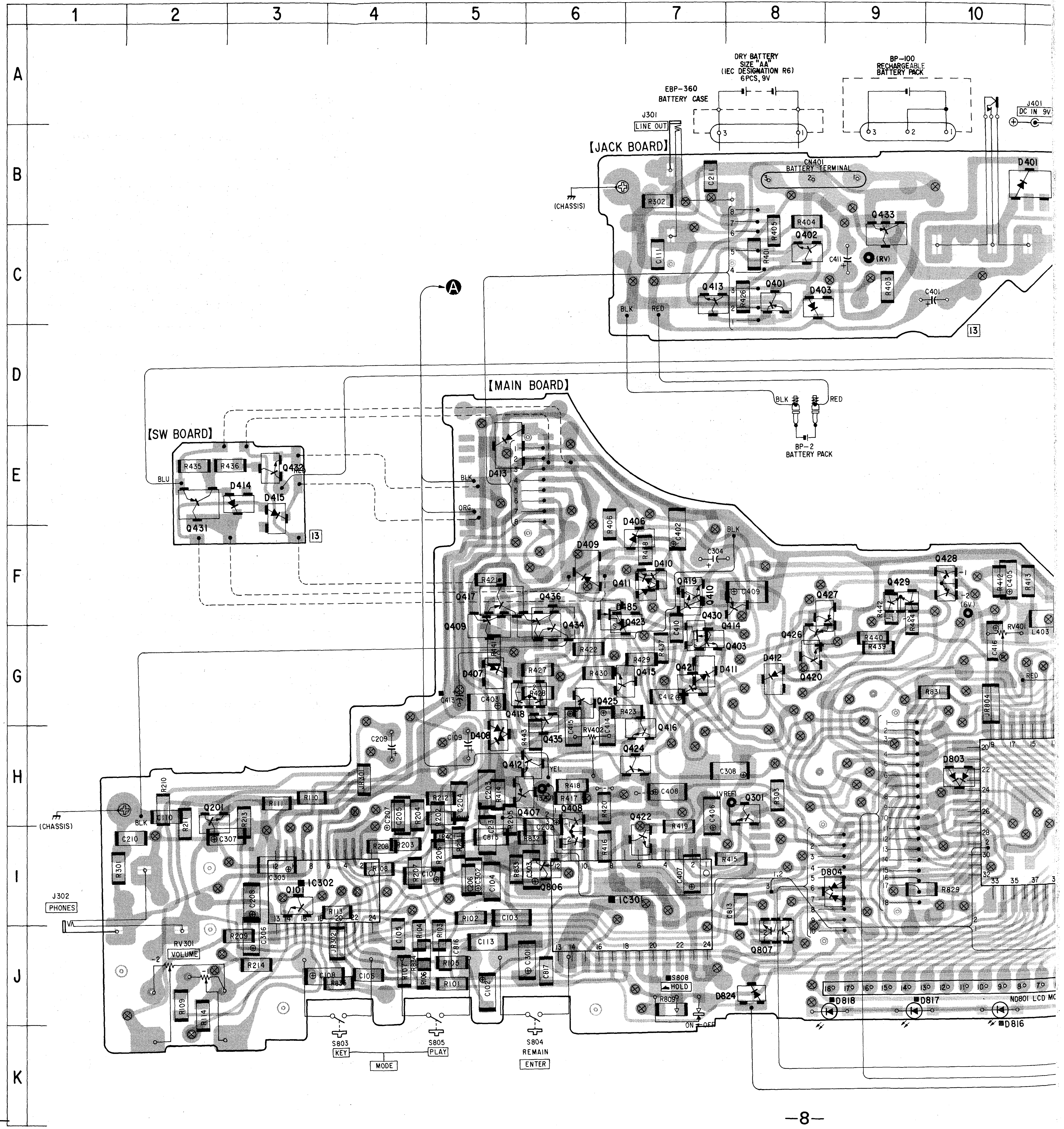
- Color code or sleeving over the end of the jacket.


WHT
RED
(RED)((GRY))

- ○—— : parts extracted from the component side.
- ●—— : parts extracted from the conductor side.
- ■ : parts mounted on the conductor side.
- ⊗ : Through hole.
- ▩ : Pattern on the side which is seen.
- ░ : Pattern of the rear side.
- ☐ : Chip components extracted from the rear side.

● Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D401	B-10	Q101	I-3
D403	C-8	Q201	H-2
D405	F-11	Q301	H-8
D406	E-7	Q401	C-8
D407	G-5	Q402	B-8
D408	G-5	Q403	G-7
D409	F-6	Q405	F-12
D410	F-7	Q406	F-11
D411	G-7	Q407	H-5
D412	G-8	Q408	H-6
D413	E-5	Q409	F-5
D414	E-3	Q410	F-7
D415	E-3	Q411	F-6
D485	F-6	Q412	H-5
D501	G-22	Q413	C-7
D502	G-21	Q414	F-8
D503	G-21	Q415	G-7
D504	E-27	Q416	G-7
D505	H-25	Q417	F-5
D801	G-12	Q418	G-5
D802	G-12	Q419	F-7
D803	H-10	Q420	G-8
D804	I-9	Q421	G-7
D805	I-13	Q422	H-7
D806	I-13	Q423	F-6
D807	I-13	Q424	H-7
D808	G-13	Q425	G-6
D809	E-12	Q426	F-8
D810	F-12	Q427	F-8
D811	H-14	Q428	F-10
D813	F-12	Q429	F-9
D814	D-13	Q430	F-7
D816	J-10	Q431	E-2
D817	J-9	Q432	E-3
D818	J-9	Q433	B-9
D819	J-11	Q434	F-6
D820	J-12	Q435	G-6
D821	J-13	Q436	F-6
D822	I-13	Q501	D-27
D823	H-14	Q502	I-26
D824	J-8	Q503	H-27
D825	J-12	Q504	G-26
		Q801	F-11
IC301	I-6	Q803	I-13
IC302	I-3	Q804	G-13
IC501	F-26	Q805	I-12
IC502	H-24	Q806	I-6
IC503	H-22	Q807	J-8
IC504	F-20	Q808	E-13
IC505	G-22	Q809	J-11
IC601	I-19	Q810	J-12
IC602	I-17		
IC801	H-11		
IC802	F-13		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9
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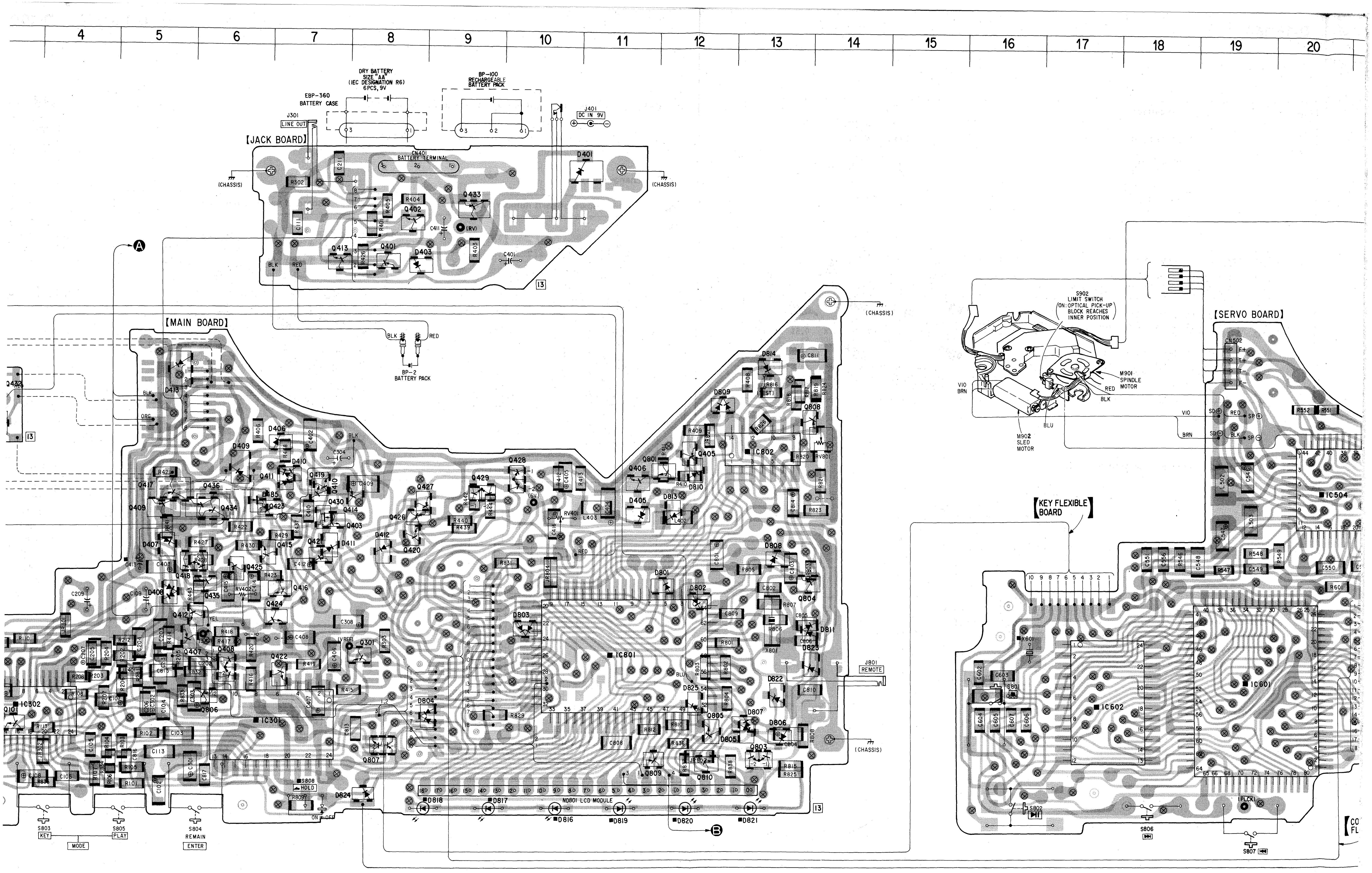
A
B
C
D
E
F
G
H
I
J
K
DRY BATTERY SIZE "AA" (IEC DESIGNATION R6) 6PCS, 9V
EBP-360 BATTERY CASE
BP-100 RECHARGEABLE BATTERY PACK
J301 LINE OUT
J401 DC IN 9V
[JACK BOARD]
(CHASSIS)
CN401 BATTERY TERMINAL
D401
Q433
Q402
Q413
Q401
D403
(RV)
13
A
[MAIN BOARD]
BLK
RED
BP-2 BATTERY PACK
[SW BOARD]
R435
R436
Q432
D414
D415
Q431
BLU
ORG
D413
D406
D409
D410
Q428
Q429
Q427
Q417
Q436
Q411
Q419
D485
Q423
Q430
Q414
Q409
Q434
Q426
Q403
Q415
Q421
D411
D412
Q420
D407
Q425
Q418
D408
Q435
Q416
Q424
Q412
Q407
Q408
Q422
Q301
D803
Q201
IC302
Q101
IC301
Q806
D804
Q807
D824
(VREF)
J302 PHONES
RV301 VOLUME
S803 KEY
MODE
S805 PLAY
S804 REMAIN ENTER
S808 HOLD
ON OFF
D818
D817
D816
ND801 LCD MC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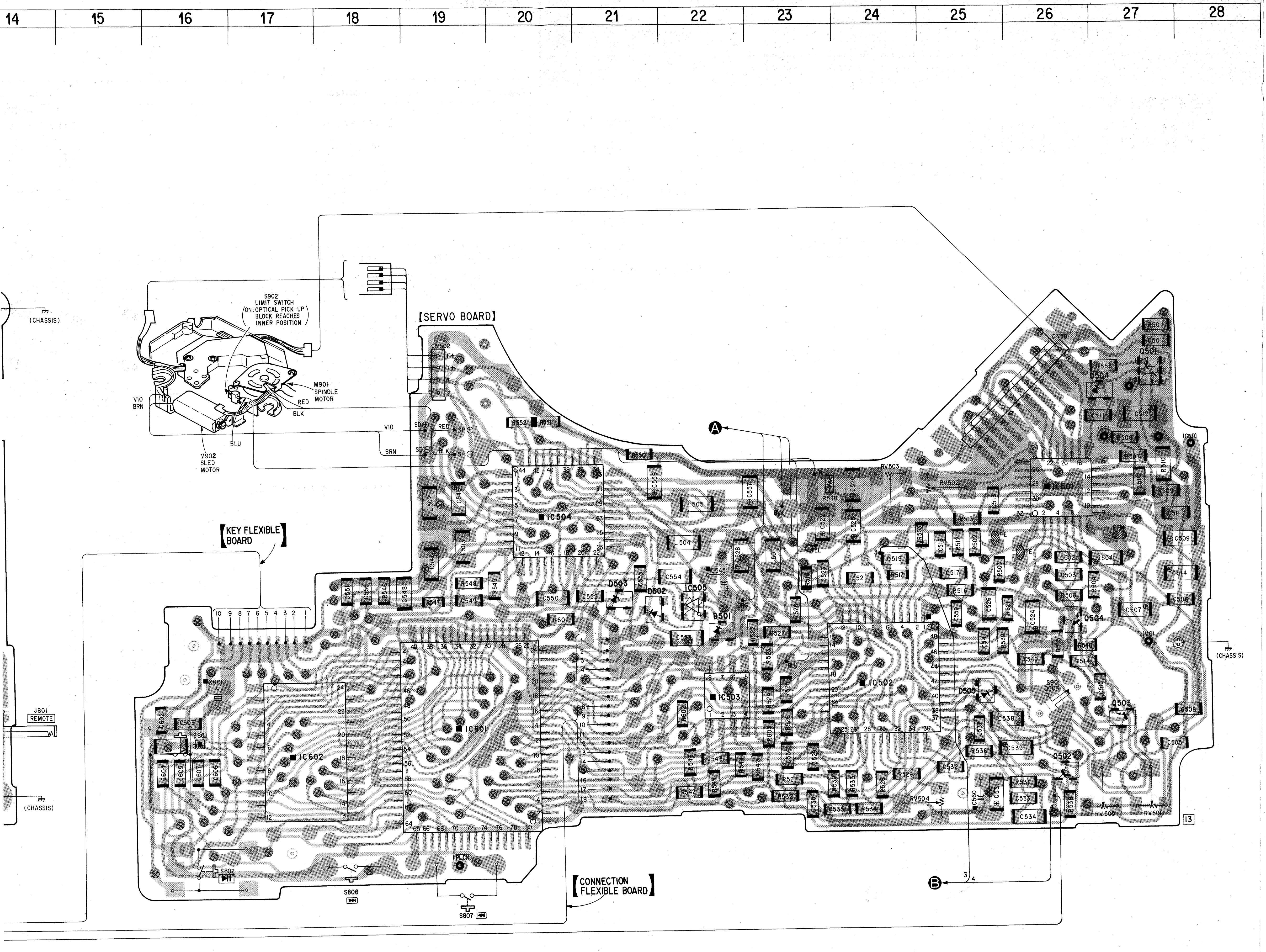
DRY BATTERY SIZE "AA" (IEC DESIGNATION R6) 6PCS, 9V
BP-100 RECHARGEABLE BATTERY PACK
EBP-360 BATTERY CASE
J301 LINE OUT
J401 DC IN 9V
【JACK BOARD】
CN401 BATTERY TERMINAL
(CHASSIS)
D401
Q433
Q402
Q401
Q413
D403
R302
R404
R405
R401
R426
R403
C211
C111
C411
C401
(RV)
BLK
RED
13
A
B
BP-2 BATTERY PACK
【MAIN BOARD】
D413
BLK
ORG
Q432
D406
D409
D410
Q411
Q419
Q410
Q436
Q417
Q434
Q409
Q423
Q430
Q414
Q403
Q427
Q426
Q420
Q428
Q429
Q406
Q801
Q405
D405
D813
D810
D809
D814
Q808
IC802
RV801
D412
D411
Q421
Q415
Q425
Q418
Q416
Q424
Q435
D407
D408
Q412
Q407
Q408
Q422
Q301
Q806
IC302
IC301
D804
Q807
D824
D803
IC801
D801
D802
Q804
D811
D823
D822
D825
Q805
D805
D807
D806
Q803
Q809
Q810
D808
RV401
RV402
L403
L402
X801
J801 REMOTE
S808 HOLD
ON OFF
ND801 LCD MODULE
D818
D817
D816
D819
D820
D821
S803 KEY
S805 PLAY
MODE
S804 REMAIN ENTER
(VREF)
YEL
BLU
(5V)
S902 LIMIT SWITCH (ON: OPTICAL PICK-UP BLOCK REACHES INNER POSITION)
M901 SPINDLE MOTOR
M902 SLED MOTOR
V10 BRN
RED
BLK
BLU
【SERVO BOARD】
CN502
F+
T+
T-
F-
SD
SB
SP
IC504
IC601
IC602
X601
S801
S802
(PLCK)
S806
S807
【KEY FLEXIBLE BOARD】
【CO FL

14
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S902 LIMIT SWITCH (ON: OPTICAL PICK-UP BLOCK REACHES INNER POSITION)
M901 SPINDLE MOTOR
M902 SLED MOTOR
V10 BRN
RED
BLK
BLU
V10
BRN
SD⊕
SD⊖
SP⊕
SP⊖
(CHASSIS)
【SERVO BOARD】
CN502
F+
T+
T-
F-
CN501
【KEY FLEXIBLE BOARD】
【CONNECTION FLEXIBLE BOARD】
IC501
IC502
IC503
IC504
IC505
IC601
IC602
D501
D502
D503
D504
D505
Q501
Q502
Q503
Q504
RV501
RV502
RV503
RV504
RV505
X601
S801
S802
S806
S807
S901 DOOR
J801 REMOTE
(PLCK)
(RF)
(GND)
(VC)
FE
TE
EFM
A
B
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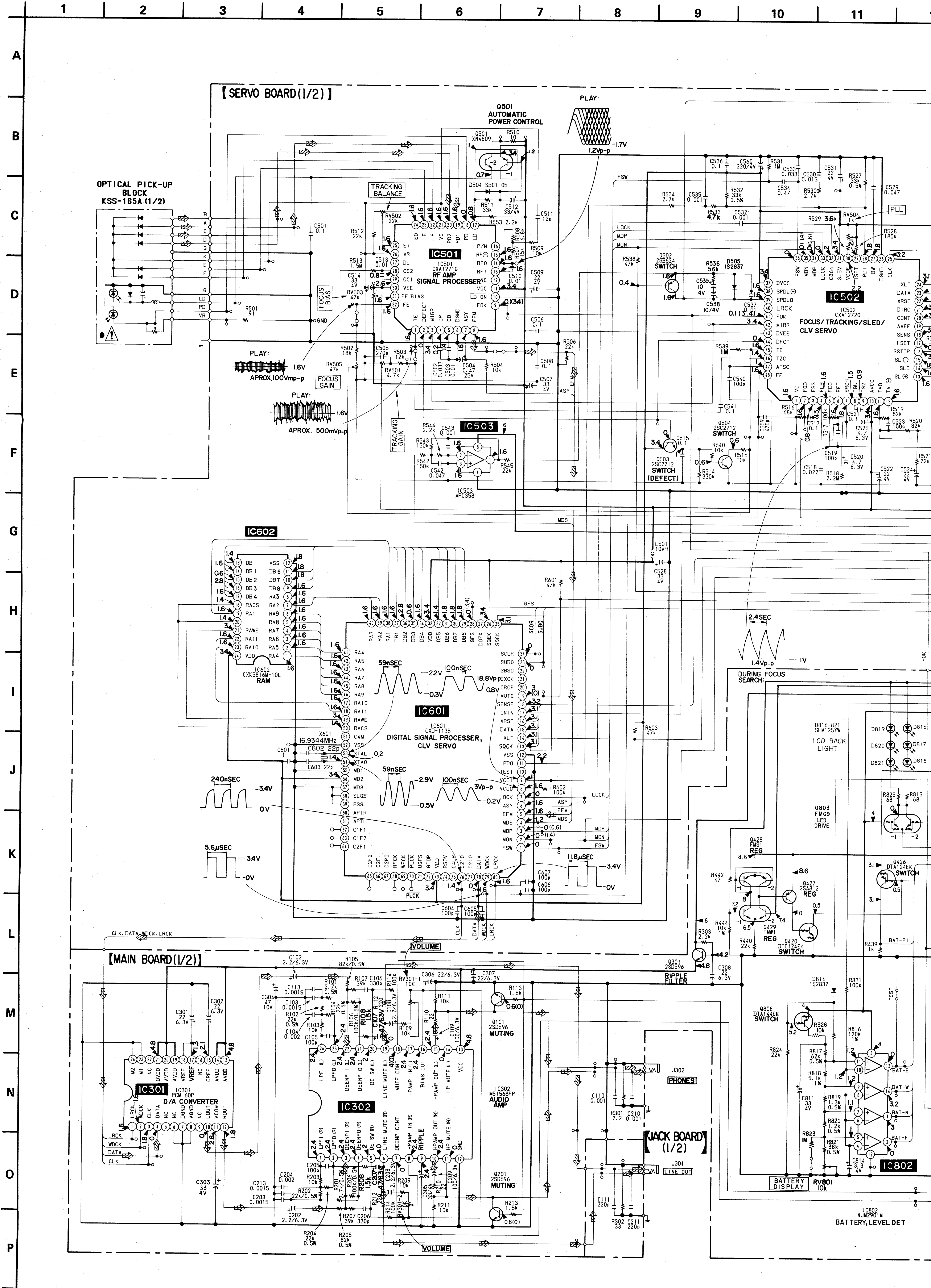
2-4. SCHEMATIC DIAGRAM (Board of part number suffix -13) • See page 6 for notes.



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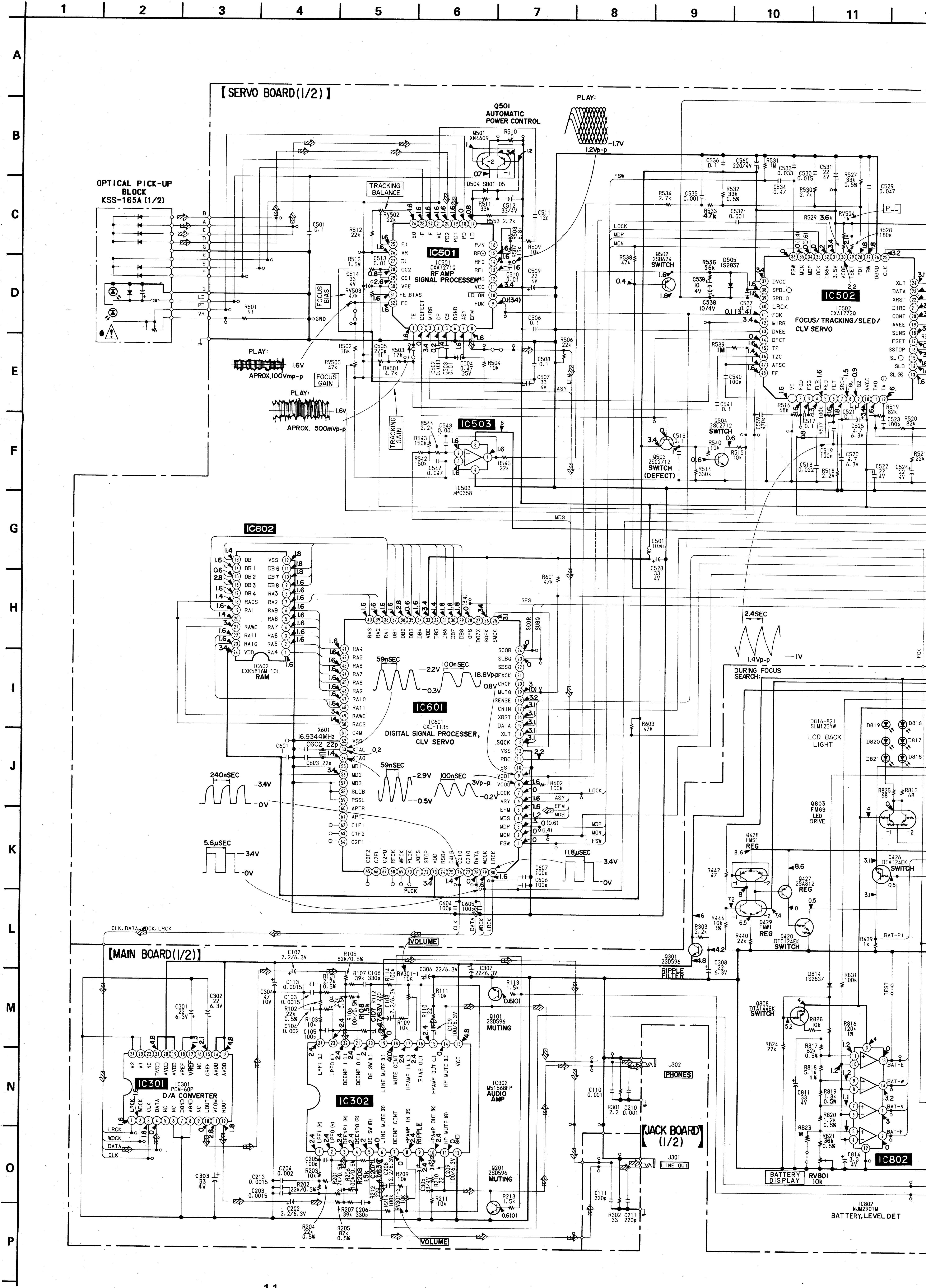
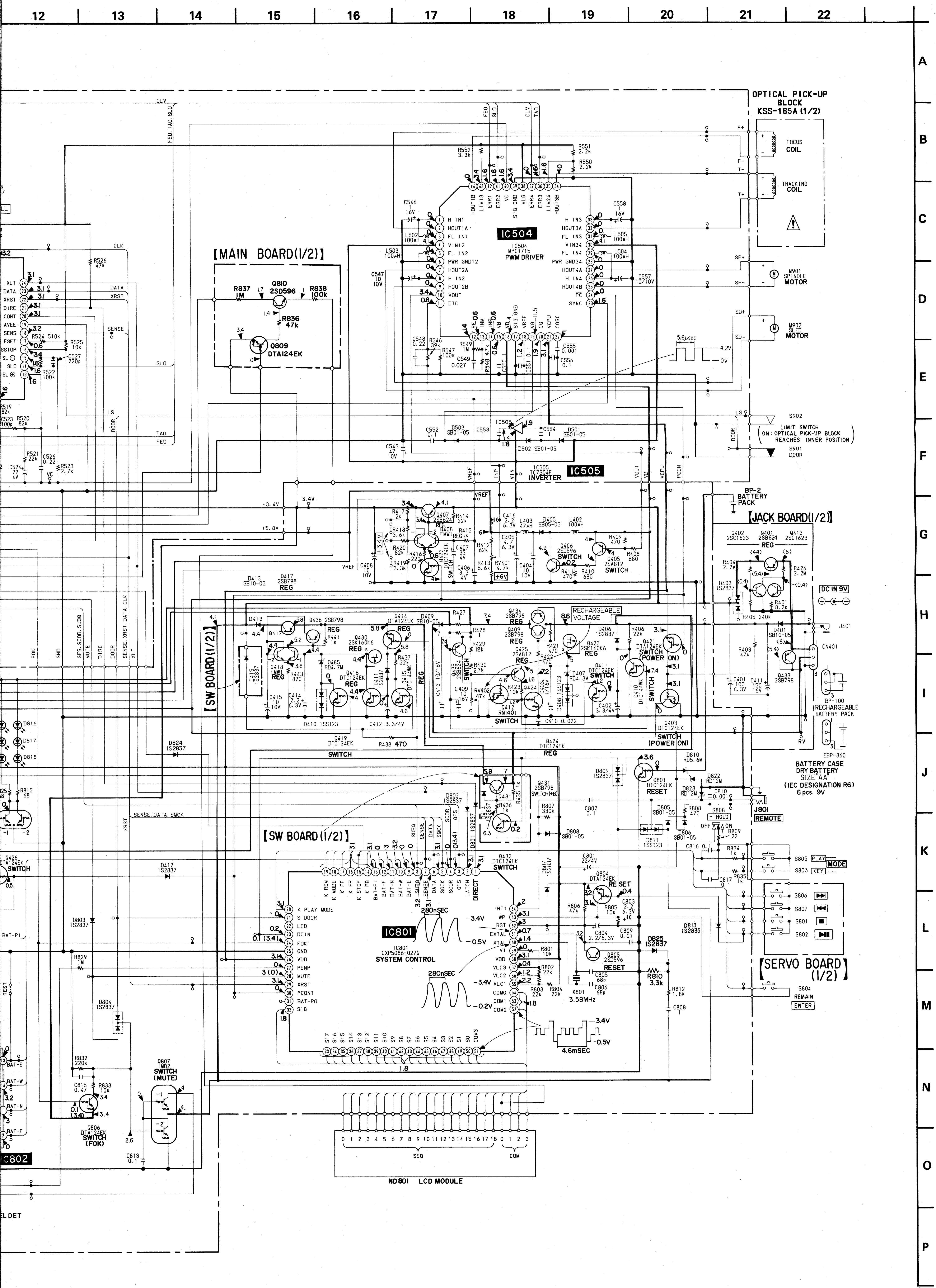
【SERVO BOARD(1/2)】
OPTICAL PICK-UP BLOCK KSS-165A (1/2)
Q501 AUTOMATIC POWER CONTROL
Q501 XN4609
TRACKING BALANCE
FOCUS BIAS
FOCUS GAIN
TRACKING GAIN
IC501
IC501 CXA1271Q RF AMP SIGNAL PROCESSER
IC502
IC502 CXA1272Q FOCUS/TRACKING/SLED/CLV SERVO
IC503
IC503 μPC358
PLAY:
1.2Vp-p
-1.7V
1.6V
APROX.100Vmp-p
APROX. 500mVp-p
PLL
Q502 2SB624 SWITCH
Q503 2SC2712 SWITCH (DEFECT)
Q504 2SC2712 SWITCH
IC602
IC602 CXK5816M-10L RAM
IC601
IC601 CXD-1135 DIGITAL SIGNAL PROCESSER, CLV SERVO
X601 16.9344MHz
59nSEC
100nSEC
18.8Vp-p
240nSEC
5.6μSEC
11.8μSEC
2.4SEC
1.4Vp-p
DURING FOCUS SEARCH:
D816-821 SLM125YW LCD BACK LIGHT
Q803 FMG9 LED DRIVE
Q428 FMS1 REG
Q427 2SA812 REG
Q429 FMW1 REG
Q420 DTC124EK SWITCH
Q426 DTA124EK SWITCH
Q301 2SD596 RIPPLE FILTER
Q808 DTA144EK SWITCH
IC802
IC802 NJM2901M BATTERY,LEVEL DET
BATTERY DISPLAY
RV801 10k
【MAIN BOARD(1/2)】
CLK. DATA. WDCK. LRCK
VOLUME
IC301
IC301 PCM-60P D/A CONVERTER
IC302
IC302 M51568FP AUDIO AMP
Q101 2SD596 MUTING
Q201 2SD596 MUTING
J302 PHONES
J301 LINE OUT
【JACK BOARD】(1/2)
LRCK
WDCK
DATA
CLK
LOCK
MDP
MON
FSW
MDS
GFS
ASY
EFM
PLCK
BAT-E
BAT-W
BAT-N
BAT-F
BAT-PI
TEST

2-4. SCHEMATIC DIAGRAM (Board of part number suffix -13) • See page 6 for notes.



SERVO BOARD (1/2)
OPTICAL PICK-UP BLOCK KSS-165A (1/2)
Q501 AUTOMATIC POWER CONTROL
Q501 XN4609
D504 SB01-05
TRACKING BALANCE
FOCUS BIAS
FOCUS GAIN
TRACKING GAIN
IC501 CXA1271Q RF AMP SIGNAL PROCESSER
IC502 CXA1272Q FOCUS/TRACKING/SLED/CLV SERVO
IC503 μPC358
Q502 2SB624 SWITCH
Q503 2SC2712 SWITCH (DEFECT)
Q504 2SC2712 SWITCH
PLAY: 1.2Vp-p -1.7V
PLAY: APROX. 100Vmp-p 1.6V
PLAY: APROX. 500mVp-p 1.6V
PLL
IC602 CXK5816M-10L RAM
IC601 CXD-1135 DIGITAL SIGNAL PROCESSER, CLV SERVO
X601 16.9344MHz
59nSEC 100nSEC 18.8Vp-p
240nSEC -3.4V -0V
5.6μSEC -3.4V -0V
11.8μSEC -3.4V -0V
2.4SEC 1.4Vp-p -1V
DURING FOCUS SEARCH
D816-821 SLM125YW LCD BACK LIGHT
Q803 FMG9 LED DRIVE
Q428 FMS1 REG
Q427 2SA812 REG
Q429 FMW1 REG
Q420 DTC124EK SWITCH
Q426 DTA124EK SWITCH
Q301 2SD596 RIPPLE FILTER
Q808 DTA144EK SWITCH
MAIN BOARD (1/2)
IC301 PCM-60P D/A CONVERTER
IC302 MS1568FP AUDIO AMP
Q101 2SD596 MUTING
Q201 2SD596 MUTING
VOLUME
JACK BOARD (1/2)
J302 PHONES
J301 LINE OUT
BATTERY DISPLAY
RV801 10k
IC802 NJM2901M BATTERY, LEVEL DET
CLK. DATA. WDCK. LRCK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P
OPTICAL PICK-UP BLOCK KSS-165A (1/2)
FOCUS COIL
TRACKING COIL
M901 SPINDLE MOTOR
M902 SLED MOTOR
IC504
IC504 MPC1715 PWM DRIVER
【MAIN BOARD(1/2)】
Q810 2SD596
Q809 DTA124EK
R837 1M
R838 100k
R836 47k
IC505
IC505 TC7S04F INVERTER
S902 LIMIT SWITCH (ON: OPTICAL PICK-UP BLOCK REACHES INNER POSITION)
S901 DOOR
BP-2 BATTERY PACK
【JACK BOARD(1/2)】
DC IN 9V
J401
CN401
BP-100 RECHARGEABLE BATTERY PACK
EBP-360 BATTERY CASE DRY BATTERY SIZE "AA" (IEC DESIGNATION R6) 6 pcs. 9V
RECHARGEABLE VOLTAGE
【SW BOARD(1/2)】
IC801
IC801 CXP5086-027Q SYSTEM CONTROL
280nSEC
4.6mSEC
X801 3.58MHz
J801 REMOTE
S808 HOLD
S805 PLAY MODE
S803 KEY
S806 ▶▶I
S807 I◀◀
S801 ■
S802 ▶II
【SERVO BOARD (1/2)】
S804 REMAIN ENTER
Q807 IMD2 SWITCH (MUTE)
Q806 DTA124EK SWITCH (FOK)
IC802
ND801 LCD MODULE
SEG
COM
EL DET
Q801 DTC124EK RESET
Q804 DTA124EK RESET
Q805 2SD596 RESET
Q403 DTC124EK SWITCH (POWER ON)
Q421 DTC124EK SWITCH (POWER ON)
Q431 2SB798 SWITCH(+B)
Q432 DTC124EK SWITCH
Q424 DTC124EK REG
Q419 DTC124EK SWITCH
Q417 2SB798 REG
Q407 2SB624 REG
Q406 2SD596 SWITCH
Q405 2SAB12 SWITCH